SONY

DIGITAL VIDEOCASSETTE RECORDER

DNW-75/75P

BETACAM SX

OPERATION MANUAL English

1st Edition

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

This apparatus must be earthed.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.

If used in USA, use the UL LISTED power cord specified below.

DO NOT USE ANY OTHER POWER CORD.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type SJT, three 16 or 18 AWG wires
Length	Less than 2.5 m (8 ft 3 in)
Rating	Minimum 10 A, 125 V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the customers in Europe

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065: Product Safety
- EN55103-1: Electromagnetic Interference (Emission)
- EN55103-2: Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment (s):

E1 (Residential), E2 (Commercial and light industrial), E3 (Urban outdoors) and E4 (Controlled EMC environment ex. TV studio)

Pour les clients européens

Ce produit portant la marque CE est conforme à la fois à la Directive sur la compatibilité électromagnétique (EMC) (89/336/CEE) et à la Directive sur les basses tensions (73/23/CEE) émises par la Commission de la Communauté européenne.

La conformité à ces directives implique la conformité aux normes européennes suivantes:

- EN60065: Sécurité des produits
- EN55103-1: Interférences électromagnétiques (émission)
- EN55103-2: Sensibilité électromagnétique (immunité)

Ce produit est prévu pour être utilisé dans les environnements électromagnétiques suivants:

E1 (résidentiel), E2 (commercial et industrie légère), E3 (urbain extérieur) et E4 (environnement EMC contrôlé ex. studio de télévision).

Für Kunden in Europa

Dieses Produkt besitzt die CE-Kennzeichnung und erfüllt sowohl die EMV-Direktive (89/336/EEC) als auch die Direktive Niederspannung (73/23/EEC) der EG-Kommission.

Die Erfüllung dieser Direktiven bedeutet Konformität für die folgenden Europäischen Normen:

- EN60065: Produktsicherheit
- EN55103-1: Elektromagnetische Interferenz (Emission)
- EN55103-2: Elektromagnetische Empfindlichkeit (Immunität)

Dieses Produkt ist für den Einsatz unter folgenden elektromagnetischen Bedingungen ausgelegt:

E1 (Wohnbereich), E2 (kommerzieller und in beschränktem Maße industrieller Bereich), E3 (Stadtbereich im Freien) und E4 (kontrollierter EMV-Bereich, z.B. Fernsehstudio)

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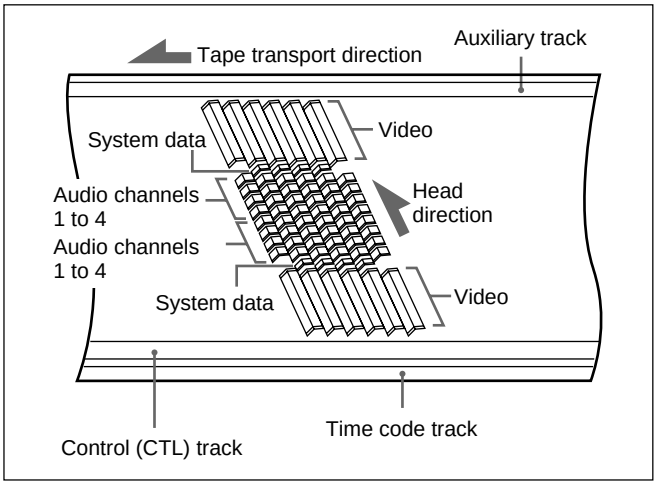
1-1 Features

The DNW-75/75P is a digital videocassette recorder, based on the Betacam SX format.
The following are some of the features of the system.

Betacam SX format

The Betacam SX format was developed as a digital version of the Betacam SP format, and is a digital VTR format supporting nonlinear editing systems and server systems. Compared with analog Betacam, the Betacam SX format reduces the tape speed to approximately one-half. The drum rotates at 75 revolutions per second, recording two frames of video data and four channels of digital audio in ten diagonal tracks. The longitudinal control and time code tracks are the same as in the analog Betacam format.



Head configuration

The unit has digital recording and playback heads for Betacam SX. There are eight digital playback heads, allowing CONFI playback (simultaneous playback) for checking recording.

Digital signal processing

This unit processes digital signals conforming to 4:2:2 component digital D-1 format.

High image quality, high audio quality, high reliability

Even with a low data rate, recording and playback with high image quality and high audio quality is achieved. The unit also has a powerful error-correcting system.

Data compression by interframe encoding

This is the first VTR to perform data compression by MPEG-2 interframe encoding conforming to 4:2:2 Profile @ Main level. The data rate is reduced by a factor of 10.

Wide range of input and output signals

You can use the following wide range of input and output signals.

Signals		Standard or option
Analog video	Input	Fitted as standard (composite and component)
	Output	
Analog audio (4 channels)	Input	Fitted as standard
	Output	
AES/EBU digital audio	Input	Fitted as standard
	Output	
SDI [a] video/audio	Input	Fitted as standard
	Output	
SDTI [b] video/audio	Input	Option
	Output	Option (BKNW-118)
Time code	Input	Fitted as standard
	Output	

a) Serial Digital Interface
b) Serial Data Transport Interface

Powerful editing functions

With two of these units together, you can carry out automatic or manual editing, using either assemble or insert editing.
The system also provides a powerful range of functions for setting and amending edit points, preview, review, and other aspects of efficient editing.

DMC (dynamic motion control) editing

You can save a varying speed, in the range -1 to +2 times normal speed, for an editing segment, and automatically edit with this varying speed.

Split editing

In insert editing, this allows the audio IN and OUT points to be set independently.

Preread editing

The audio or video on the tape can be read out, processed, and rerecorded with no time shift, using the preread heads.

Cross-fade editing

For audio editing, you can select from cut-in editing, fade-in editing, and fade-in/fade-out editing.

Menu-based setup

Initial settings for the unit's operating condition, the interfaces with connected equipment, and so forth can be made by menu operations on the front panel of the unit.

Wide range of indications

In addition to the LED display which shows the operating status and current settings of this unit and connected equipment, a fluorescent display displays numerical values including time code, user bits, editing IN and OUT points, editing durations, error messages and setup menu information.

Selection of external/internal time code

You can record using either an external time code or the output of the built-in time code generator. You can also synchronize the built-in time code generator to an external time code.

Connection to external control devices

It is possible to connect a BVE-900/910/2000/9000/9000P/9100/9100P or other BVE-series editor, a control and monitoring computer, a BVR-50/50P remote controller for the built-in digital video processor, and so forth.

Economy

- You can use a variety of tapes, including low-priced tapes for UVW-series VTRs and tapes for Betacam SP or Betacam SX format. Using large cassettes, recording of 180 minutes or more is possible.
- The design needs minimal maintenance, and requires no daily maintenance or checks. The drum and other components have reduced maintenance costs.

Rack mounting

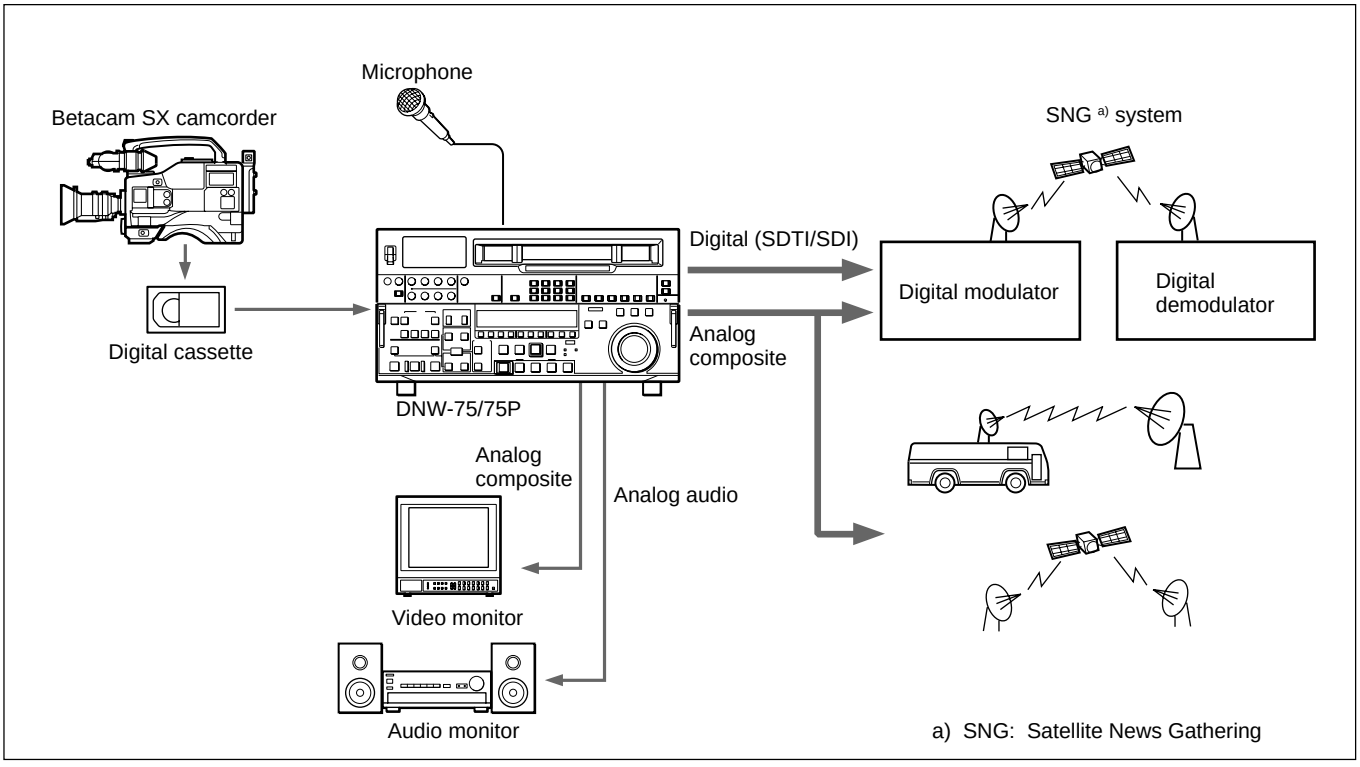
The unit can be mounted in an EIA standard 19-inch rack.

For details of rack mounting, refer to the Maintenance Manual Part 1.

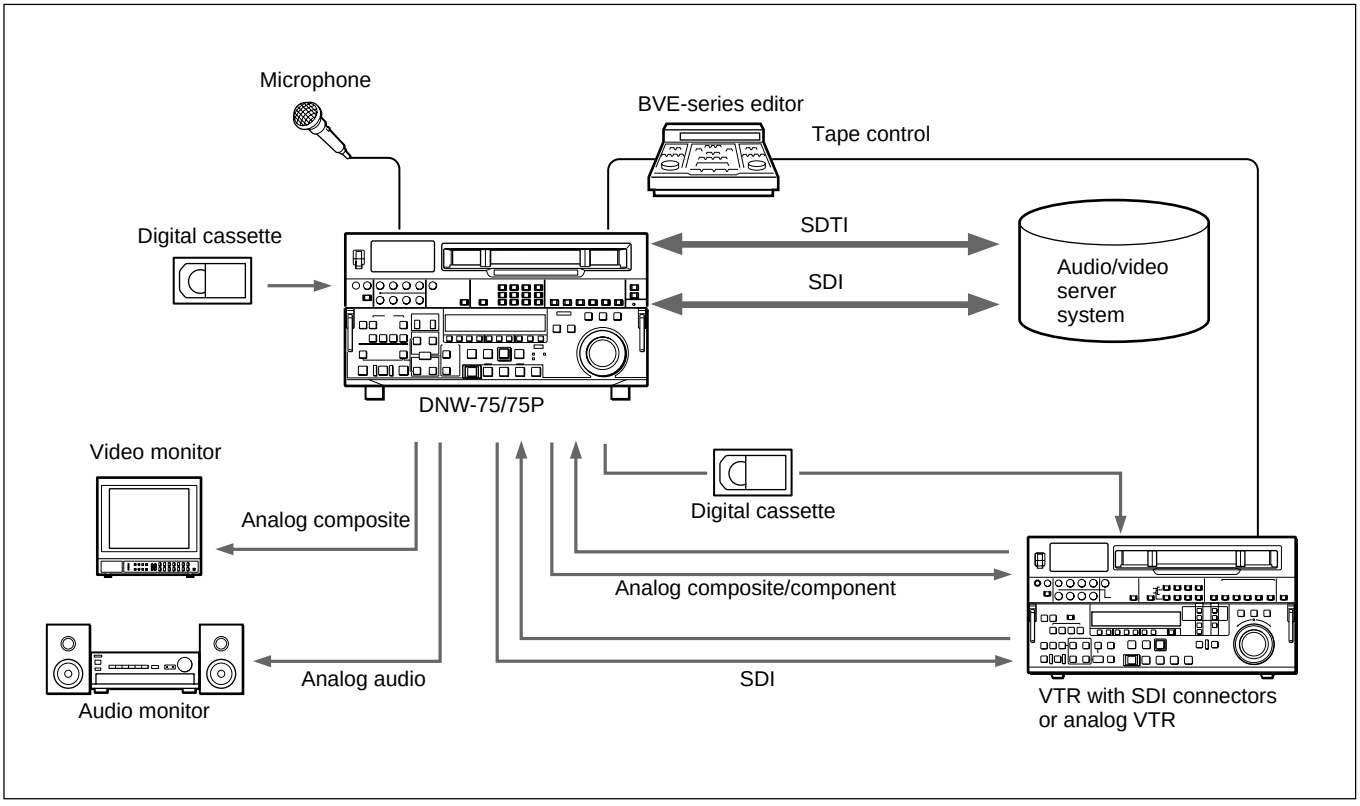
1-2 Example System Configurations

The following conceptual diagrams show examples of use in an outside broadcast van or local station and within a broadcasting station.

• Operation in an outside broadcast van or local station

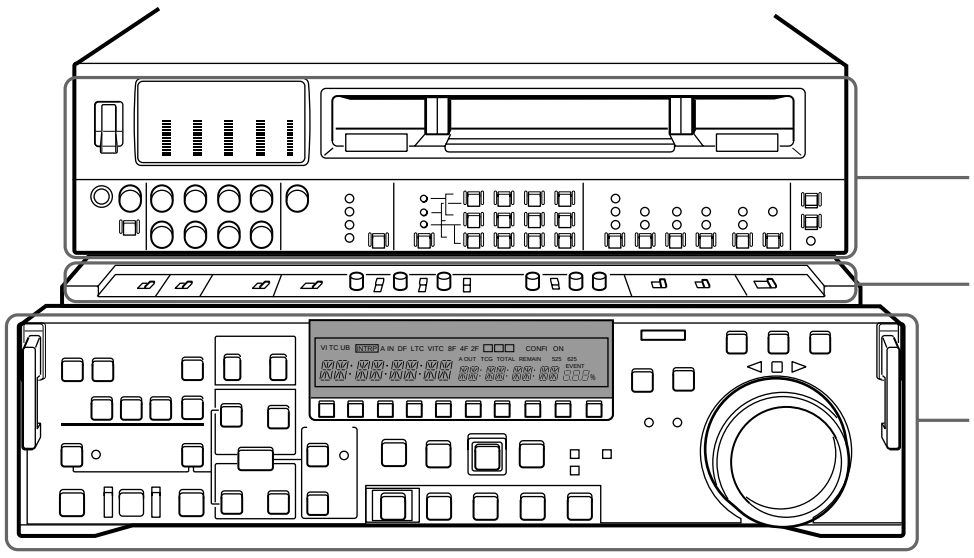


• Operation in a broadcasting station



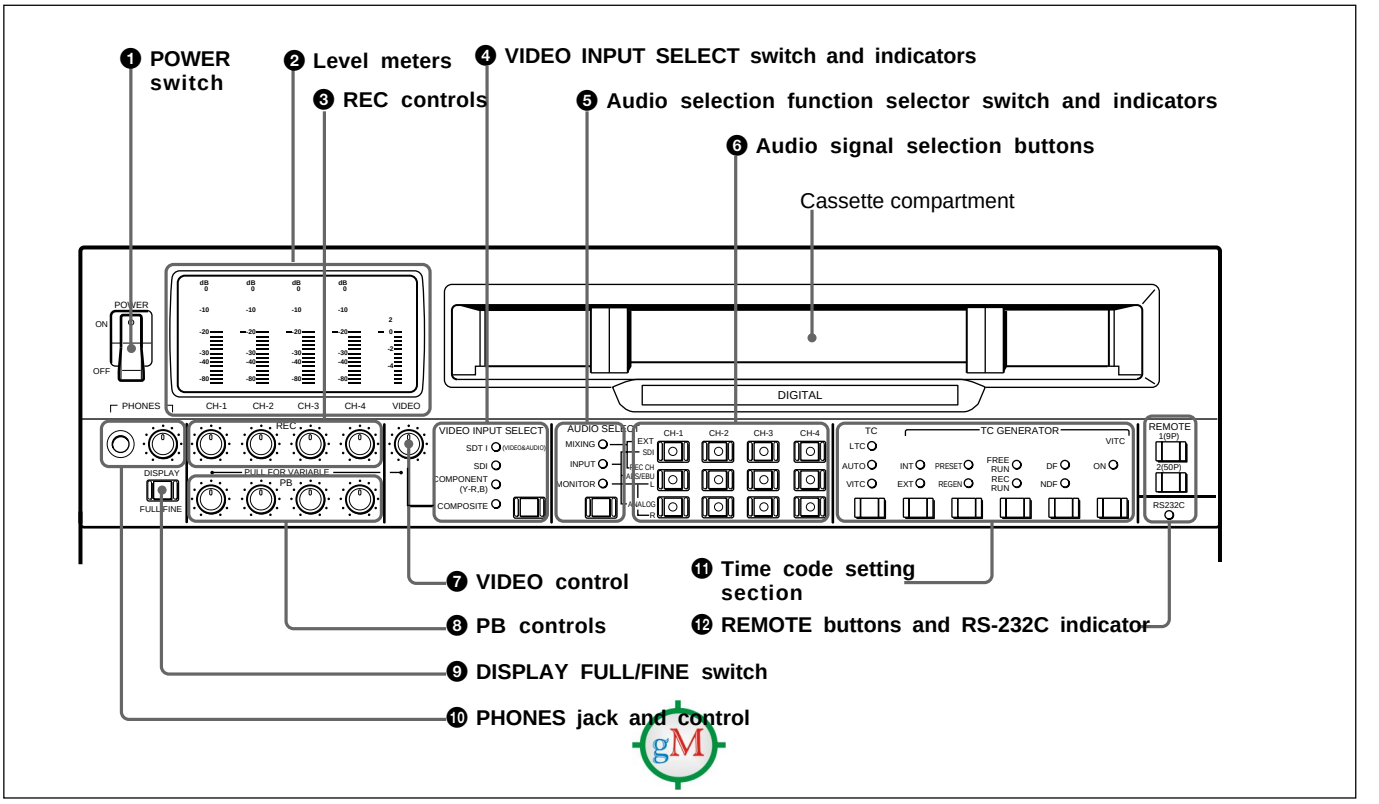
2-1 Control Panels

There are three control panels, as follows:
- Upper control panel
- Lower control panel
- Subsidiary control panel



a) To reveal the subsidiary control panel, pull the lower control panel forward.

2-1-1 Upper Control Panel


❶ POWER switch
❷ Level meters
❸ REC controls
❹ VIDEO INPUT SELECT switch and indicators
❺ Audio selection function selector switch and indicators
❻ Audio signal selection buttons
Cassette compartment
DIGITAL
❼ VIDEO control
❽ PB controls
❾ DISPLAY FULL/FINE switch
❿ PHONES jack and control
⓫ Time code setting section
⓬ REMOTE buttons and RS-232C indicator

❶ POWER switch

This powers the unit on and off. When the unit is powered on, the level meters ❷ and the fluorescent display in the lower control panel light.
To power the unit off, press the side of the POWER switch marked “OFF”.

❷ Level meters

These show the audio levels of channels 1 to 4 (recording levels in recording mode or E-E mode [1] and playback level in playback mode) and the video levels of input composite video signals.
There are two modes for audio level indications: FULL and FINE, selected by the DISPLAY FULL/FINE switch ❾.

❸ REC (recording) controls

These individually adjust the recording levels on channels 1 to 4.
To set the recording level, put the unit in E-E mode, pull out the control knobs and adjust the level while watching the level meters ❷.
When the control knobs are pushed in, the recording levels return to the preset levels (0 dBm reference level for an input of +4 dBm), and cannot be adjusted.
These controls do not function when SDTI video input is selected.

For details of selecting the E-E mode, see the description of the REC button in the tape transport control section (see page 2-14) and the PB.EE button in the monitor/menu/ display setting section (see page 2-8).

1) E-E mode: Abbreviation of “Electric-to-Electric mode”. In this mode, video and audio signals input to the VTR are output after passing through internal electric circuits, but not through magnetic conversion circuits such as heads and tapes. This can be used to check input signals and for adjusting input signal levels.

❹ VIDEO INPUT SELECT switch and indicators

This switch selects the video input signal in the following sequence.

SDTI → SDI → COMPONENT → COMPOSITE

To select SDTI requires the option for SDTI input.

SDTI: SDTI video signal input to the SDTI INPUT connector (In this case the SDTI audio signals are simultaneously selected.)

SDI: SDI video signal input to the SDI INPUT connectors

COMPONENT: Analog component video signal input to the COMPONENT VIDEO INPUT connectors

COMPOSITE: Analog composite video signal input to the COMPOSITE VIDEO INPUT connectors

The indicators light according to the selection. If there is a fault on the selected input (such as no input signal), the indicator flashes.

Using a video test signal

Holding down the VIDEO INPUT SELECT switch for at least three seconds lights all four of the indicators, and causes an internal signal generator to produce a video test signal.

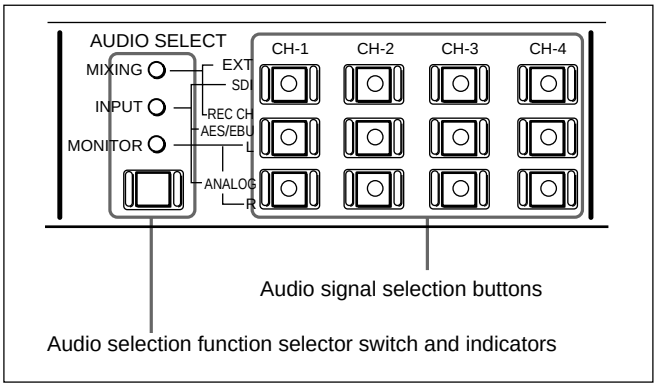
To stop the production of the video test signal, press this switch and release within three seconds.

When the VIDEO INPUT SELECT switch is set to SDTI, you cannot use the video test signal.

It is only possible to use this function when extended menu item 710 is set to select a video test signal.

❺ Audio selection function selector switch and indicators

Pressing this switch lights the MIXING indicator, INPUT indicator and MONITOR indicator cyclically, and selects the function of the audio signal selection buttons.



When the MIXING indicator is lit: You can use the EXT and REC CH rows of the audio signal selection buttons to switch the audio signals to be recorded or carry out mixing.

When the INPUT indicator is lit: You can use the SDI, AES/EBU, and ANALOG L/R rows of the audio signal selection buttons to select the audio input signals.

When the MONITOR indicator is lit: You can use the L and R rows of the audio signal selection buttons to select the audio output channels.

Using an audio test signal

Press the audio selection function selector switch several times until the INPUT indicator lights. Then press the CH-1 button in the SDI row, the AES/EBU row, or the ANALOG row and keep it pressed for three seconds or longer. When you release the button, all of the audio signal selection buttons light and an internal signal generator produces an audio test signal.

To stop the production of the audio test signal, press the audio selection function selector switch so that only the INPUT indicator is lit. Then press any of the audio signal selection buttons, releasing the button within three seconds.

Note

When the VIDEO INPUT SELECT switch is set to SDTI, you cannot use the audio test signal.

It is only possible to use this function when extended menu item 808 is set to select an audio test signal.

❻ Audio signal selection buttons

The function of these buttons depends on the setting of the audio selection function selector switch as follows.

When the MIXING indicator is lit

To select which input channel is to be recorded on which channel, press one of the buttons (CH-1 to CH-4) in the EXT row while holding down one of the buttons (CH-1 to CH-4) in the REC CH row.
For example, if you press the CH-2 button in the EXT row while pressing the CH-1 button in the REC CH row, signals from input channel 2 are recorded on channel 1.
If you press two buttons in the EXT row simultaneously, signals from the corresponding two channels are mixed and recorded on the same channel.

Note

Before selecting signals from two input channels for mixing and recording in one recorder channel, check to be sure that the emphasis settings are off for both of the two input channels. Recording and playback of mixed signals cannot be carried out correctly if the emphasis is on for either input channel.
You can check the settings in the channel display section of the level meters. EMPH is displayed for channels with the emphasis setting on.

The button that was pressed in the REC CH row remains lit after you have finished making the settings. When you press the lit button in the REC CH row, the selected button or buttons in the EXT row light up again. This allows you to check the settings. To cancel the settings, press the corresponding button in the REC CH row while pressing the button for the same channel in the EXT row.

Adjusting the recording level when the MIXING indicator is lit

Adjust by rotating the REC knob for the player channel while viewing the level meter for the recorder channel.
For example, when recording player channel 1 signals on recorder channel 2, rotate the CH-1 REC knob while viewing the level meter for CH-2.

When the INPUT indicator is lit

For each channel, press the button in the SDI row, the AES/EBU row, or the ANALOG row.
The pressed button lights and the corresponding audio input signal is selected.
However, when the video input signals selected with the VIDEO INPUT SELECT switch are SDTI, the audio input signals for all channels are also set to SDTI.

When the MONITOR indicator is lit

Press the buttons in the L and R rows to select the audio signal channels output from the MONITOR OUTPUT L and MONITOR OUTPUT R connectors. You can press two or more buttons simultaneously in each row, turning them on, to monitor an output produced by mixing the selected channels.

❼ VIDEO control

This adjusts the level of a composite video signal input to the COMPOSITE VIDEO INPUT connectors.
Pull out the control knob and adjust the level.
When the control knob is pushed in, the automatic gain control (AGC) function comes into effect.

❽ PB (playback) controls

These adjust individually the playback levels on channels 1 to 4.
During playback, pull out the control knobs and adjust the level while monitoring the audio level indication on the level meters ❷.
When the control knobs are pushed in, the playback levels return to the preset levels, and cannot be adjusted.

❾ DISPLAY FULL/FINE switch

This switches the audio level meter ❷ display as follows:

FULL: The display covers the range – 60 dB to 0 dB or – 40 dB to +20 dB as selected using extended menu item 806.
In this mode the segment of the display corresponding to the current audio level and all lower segments light.

FINE: The display is enlarged, with a step of 0.25 dB. A segment indicating the reference level lights.
In this mode only the segment of the display corresponding to the current audio level lights. If the audio level exceeds the maximum display level, the top segment flashes, and if the audio level goes below the minimum display level, the bottom segment flashes.

⑩ PHONES jack and control

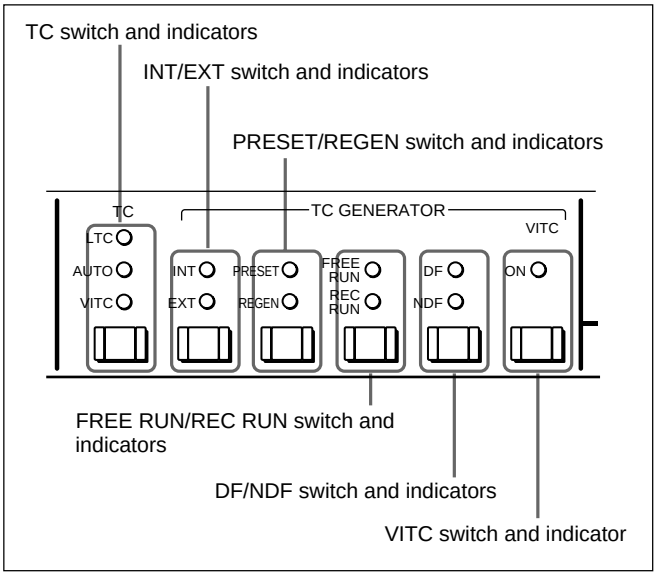
Connect stereo headphones with an impedance of 8 ohms, to monitor the sound during recording, playback and editing.

The control knob adjusts the volume.

It is possible to make a setting so that the output volume from the MONITOR OUTPUT connectors is controlled simultaneously.

In order that the output volume from the MONITOR OUTPUT connectors can be controlled simultaneously, an internal board switch setting is required. For details, refer to the Maintenance Manual Part 1.

⑪ Time code setting section



TC (time code) switch and indicators

This switch selects the time code displayed in the lower control panel in the sequence: LTC [1] → AUTO → VITC [2]. The indicator corresponding to the selection lights.

When AUTO is selected, the time code displayed is VITC when the tape transport speed is up to half-speed, and LTC when it is more than half-speed.

INT/EXT (internal/external) switch and indicators

This switch selects the time code used:

INT: The time code produced by the internal time code generator.

EXT: The external time code selected as follows.

- When the TC switch is set to LTC or AUTO
  The external time code input to the TIME CODE IN connector.
- When the TC switch is set to VITC
  The VITC time code included in the input video signal.

PRESET/REGEN (preset/regenerated) switch and indicators

This switch makes the following selection for the internal time code generator:

PRESET: The initial value of the time code produced by the internal time code generator can be preset by a control panel operation or by remote control from a device connected to the REMOTE1-IN(9P) connector.

REGEN: The internal time code generator is synchronized to the playback time code read by the internal time code reader.

The indicator corresponding to the selection lights.

FREE RUN/REC RUN switch and indicators

This switch selects the time code run mode of the internal time code generator.

FREE RUN: Regardless of the operating mode of this unit, the time code value advances continuously while the power is on.

REC RUN: The time code value advances only during recording. When this mode is selected, set the INT/EXT switch to INT, and the PRESET/REGEN switch to PRESET.

The indicator corresponding to the selection lights.

1) LTC: abbreviation of Longitudinal Time code. This time code is recorded on a longitudinal track on the tape. Reading is unreliable at low speeds, and not possible at all during still playback.

2) VITC: abbreviation of Vertical Interval Time code. This is inserted in the vertical blanking interval and recorded on the video tracks. It can be read at low speeds and during still playback, but not during high-speed playback.

DF/NDF (drop-frame/non-drop-frame) switch and indicators

In a 525/60 system, this switch selects the mode of advancing the time code generator and CTL counter.

DF: Drop-frame mode.[1)]

NDF: Non-drop-frame mode.[1)]

The indicator corresponding to the selection lights.

Note

When the PRESET/REGEN switch is set to REGEN, since the time code generator is synchronized to the playback time code, this switch has no effect.

VITC switch and indicator

To record the time code produced by the internal time code generator as a VITC, press this switch, lighting the ON indicator.

When the ON indicator is off, internally generated time code is not recorded as VITC, but VITC present in the input video signal is recorded unchanged.

⓬ REMOTE buttons and RS-232C indicator

Press one of these buttons to select the device controlling this unit.

1(9P): This unit is controlled by the device connected to the REMOTE1-IN(9P) or REMOTE1-OUT(9P) connector. The button lights.

2(50P): This unit is controlled by the device connected to the REMOTE PARALLEL I/O(50P) connector. The button lights.

RS-232C indicator: This indicator lights when this unit is controlled through the RS-232C connector.

1) Drop-frame/non-drop-frame mode:
In the NTSC system, the actual frame rate is 29.97 frames per second. There is therefore a cumulative discrepancy between the actual frame rate and the 30 frames per second rate on which time code is based. In drop-frame mode, except once every 10 minutes, the first two frames are skipped at the beginning of each minute to keep the time code values in step with actual elapsed time.
In non-drop-frame mode, the correction is not carried out, and there is a discrepancy of about 86 seconds per day between actual elapsed time and time code values.

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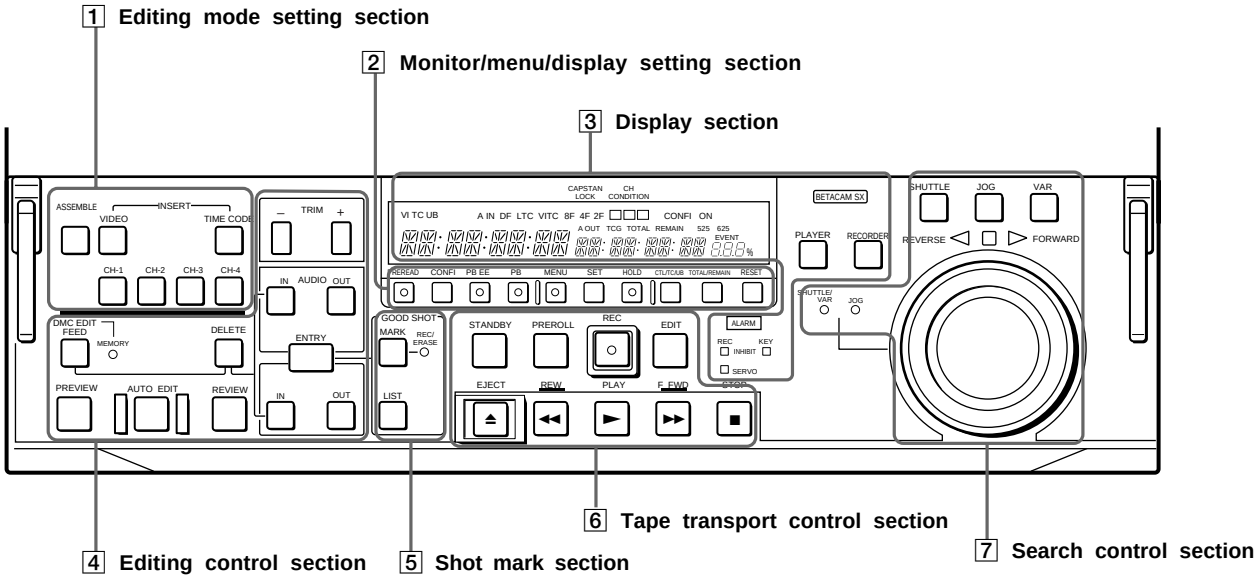
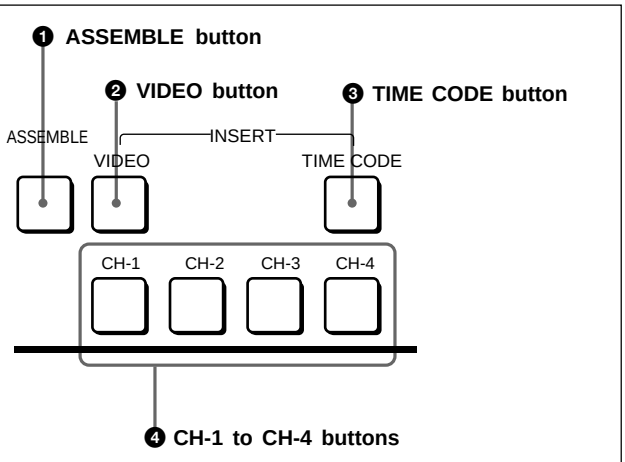
2-1-2 Lower Control Panel


1 Editing mode setting section
2 Monitor/menu/display setting section
3 Display section
6 Tape transport control section
7 Search control section
4 Editing control section
5 Shot mark section

1 Editing mode setting section



❶ ASSEMBLE button
Press this button, turning it on, to carry out assemble editing [1].
All signals (video signals, audio signals, time code signals, and so forth) are recorded together.

❷ VIDEO button
To select the video signal for insert editing [2], press this button, turning it on.

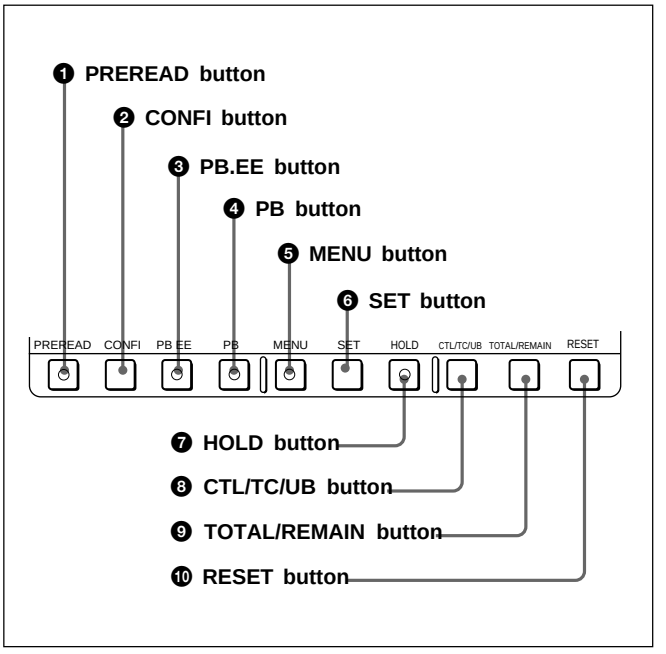
❸ TIME CODE button
To select time code for insert editing, press this button, turning it on.

❹ CH-1 to CH-4 (channel 1 to channel 4) buttons
For insert editing, to select audio channels 1 to 4, press these buttons, turning them on. You can select any number of the channels.

1) Assemble editing: Editing in which new video/audio is added in sequence to the end of existing recorded video/audio.

2) Insert editing: Editing in which new video/audio is added into the middle of existing recorded video/audio.

2 Monitor/menu/display setting section



❶ PREREAD button

When this is lit, a preread (read-before-write) is carried out in insert editing.

❷ CONFI (confidence) button

When this is lit, the CONFI indicator appears in the display, and during recording the video and audio signals are simultaneously played back by the special-purpose confidence heads. This enables you to check the signals being recorded.

❸ PB.EE (playback E-E) button

To select E-E mode input signals for the video/audio signals output during fast forward, rewind, still, and standby, press this button, turning it on.
Either one of this button and the PB button ❹ is always lit.

❹ PB (playback) button

To select playback signals for the video/audio signals output during fast forward, rewind, still, and standby, press this button, turning it on.
Either one of this button and the PB.EE button ❸ is always lit.

❺ MENU button

Use this button for setup menu operations.
Pressing this button, turning it on, displays setup menus in the fluorescent display of the display section 3. Press the button once more to exit from the menu display.

For details of setup menu operations, see Chapter 7, "Menu System".

❻ SET button

Use this button for setting time code and user bit values and in setup menu operations.

For details of setup menu operations see Chapter 7, "Menu System", and for details of setting time code and user bit values see Section 4-1-2, "Recording Time Code and User Bit Values" (page 4-2).

❼ HOLD button

To stop updating of the time code or user bit value in the fluorescent display (that is, to hold the display), press this button, turning it on. To set a time code or user bit value, first press this button to hold the value.

❽ CTL/TC/UB button

This selects the value displayed in the fluorescent display in the following sequence: CTL, TC, UB.
As the display changes, the corresponding indicators over the fluorescent display also show the status.

Time code display value selection and display contents

Display selection	Value displayed	Indicator status
CTL	Tape running time (hours, minutes, seconds, frames) computed from the CTL (control) signal recorded on the tape during playback, or a count of the CTL signal pulses during recording.	TC and UB indicators are both off.
TC	Playback time code read by the internal time code reader or time code during recording. a)	The TC indicator lights and the UB indicator goes off.
UB	User bit value inserted in the playback time code or time code during recording. a)	The UB indicator lights and the TC indicator goes off.

a) The selection of LTC or VITC is made by the TC switch. When VITC is selected, the VITC indicator over the TC switch lights.

❾ TOTAL/REMAIN button

Press this button to switch between a TOTAL indication or REMAIN (remaining) indication on the fluorescent display. According to the selection, the TOTAL indicator or REMAIN indicator above the fluorescent display lights.

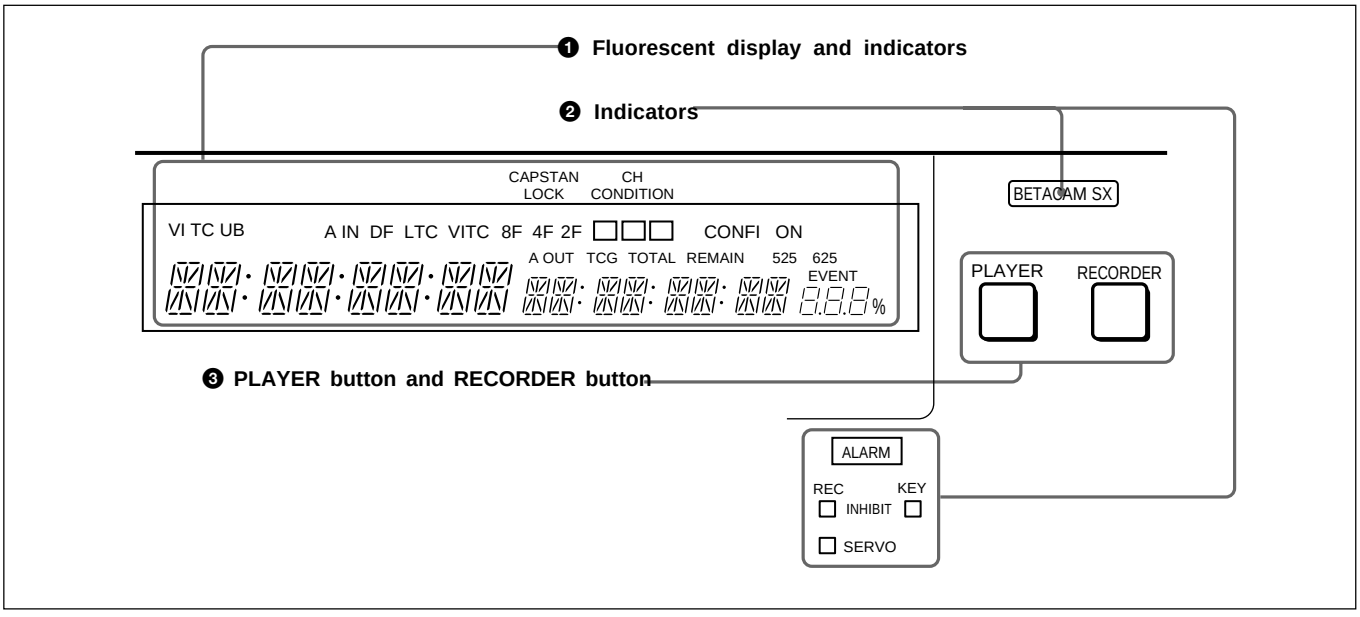
For details of the TOTAL or REMAIN indicators, see the next page.

❿ RESET button

To reset a CTL, time code (TC) or user bit (UB) value displayed in the fluorescent display, hold this button down.

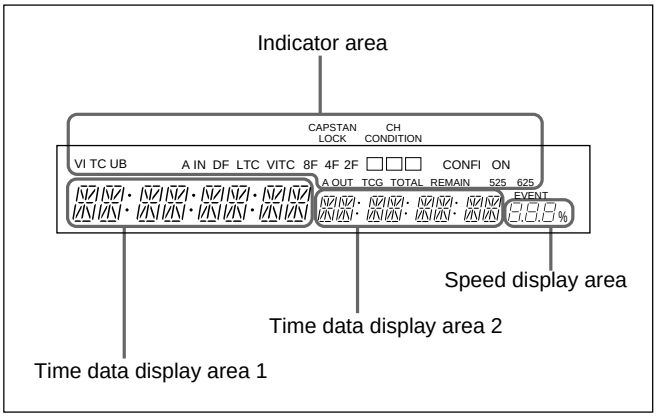
Resetting the CTL value erases all edit points.

3 Display section



❶ Fluorescent display and indicators

This comprises a time data display area 1, a time data display area 2, and a speed display area provided by the fluorescent display, and also a number of indicators.



Time data display area 1

Normally this displays a CTL count, time code value, or user bit value according to the setting of the CTL/TC/UB button in the monitor/menu/display setting section 2 and the setting of the TC switch in the upper control panel.

It is also used to display an IN point (or audio IN point), a duration, error messages, setup menus, and so forth.

For details of the selection of CTL count, time code value, or user bit value see the description of the CTL/TC/UB button (on the previous page).

Time data display area 2

This shows a TOTAL time indication or REMAIN (remaining) time indication according to the setting of the TOTAL/REMAIN button in the monitor/menu/display setting section 2. Depending on the display, the corresponding one of the TOTAL and REMAIN indicators immediately above lights.

TOTAL: Time value representing the total tape length.

REMAIN: Time value representing the remaining tape length.

These are approximate values calculated on the basis of the detected tape diameter. They are not precise to units of seconds.

When no cassette has been loaded or the loaded cassette has not started running, or when the remaining tape length has not yet been calculated because the tape started running only seconds before, "---------" appears as the TOTAL/REMAIN indication.

This area is also used to display an OUT point (or audio OUT point), a time code value produced by the time code generator, a duration, error messages, setup menus, and so forth.

Speed display area

This displays the speed during feed or tape speed override play.

Indicator area

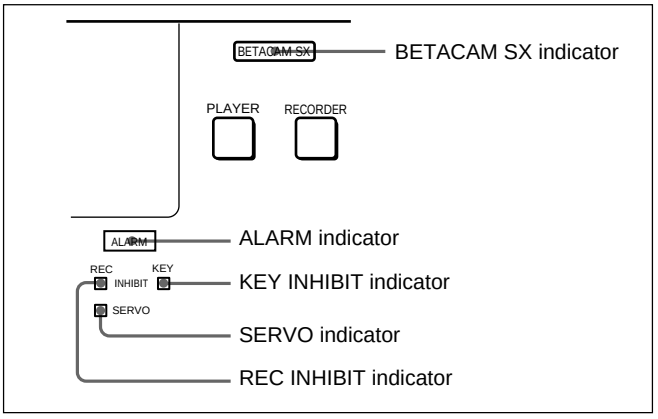
This includes the following indicators.

- **VI (VITC) indicator:** When a VITC time code value or VITC user bit value is displayed in the time data display area 1, this indicator lights together with the TC or UB indicator.
- **TC (time code) indicator:** This lights when a time code is displayed in the time data display area 1.
- **UB (user bits) indicator:** This lights when a user bit value is displayed in the time data display area 1.
- **A (audio) IN indicator:** When an IN point is displayed in time data display area 1, the IN indicator lights, and when an audio IN point is displayed, the A indicator lights in addition to the IN indicator.
- **DF (drop-frame) indicator:** This lights when a displayed time code value is in drop-frame mode.
- **LTC, VITC indicators:** Regardless of the display in the time data display area 1, these indicators light when the corresponding time code values are being read or recorded (during recording).
- **CAPSTAN LOCK 8F/4F/2F (8 fields/4 fields/2 fields) indicators:** The indicator lights corresponding to the mode selected by the CAPSTAN LOCK switch on the subsidiary control panel or in setup menu item 106.
- **CH (channel) CONDITION indicator:** A three-color indicator shows the state of the playback signal.
  Green: The state of the playback signal is good.
  Yellow: The playback signal is somewhat deteriorated, but playback is possible.
  Red: The playback signal is deteriorated. When this indicator remains on, head cleaning or an internal inspection is necessary.
- **CONFI (confidence) ON indicator:** This indicates the state of the VTR CONFI playback [1] function. When the CONFI playback function is enabled, the CONFI indicator lights, and when CONFI playback is actually being carried out the ON indicator also lights.
  CONFI playback settings are carried out using the CONFI button.
- **A (audio) OUT indicator:** When an OUT point is displayed in time data display area 2, the OUT indicator lights, and when an audio OUT point is displayed, the A indicator lights in addition to the OUT indicator.
- **TCG (time code generator) indicator:** This lights when a time code generated by the internal time code generator is displayed in the time data display area 2.
- **TOTAL, REMAIN indicators:** When the "TOTAL" time is displayed in time data display area 2 the TOTAL indicator lights, and when the "REMAIN" time is displayed in time data display area 2 the REMAIN indicator lights.

1) CONFI playback: This refers to playback of the audio and video signals immediately after recording, using the confidence heads, the signal being output to all intents and purposes simultaneously with recording. This is used to check recording.

• **525, 625:** The indicator showing the number of scan lines for the television standard selected using basic menu item 013 lights (NTSC: 525 scan lines, field frequency 60 Hz; PAL: 625 scan lines, field frequency 50 Hz).

❷ Indicators



BETACAM SX indicator
This indicator lights when the unit is powered on.

ALARM indicator
This lights when a hardware error is detected on the unit, and goes off when the error is resolved.
When this indicator is lit, an error message appears in the fluorescent display. If you are using the SDI OUTPUT 3 (SUPER) or COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, then when the CHARACTER switch in the subsidiary control panel is set to ON, the error message also appears on the monitor screen.

KEY INHIBIT indicator
This indicator lights when the KEY INHIBIT switch on the subsidiary control panel is set to ON.

SERVO indicator
When the drum servo and capstan servo are locked [1], this indicator lights.

REC (recording) INHIBIT indicator
This indicator is on or off according to the combination of the setting of the REC INHIBIT switch on the subsidiary control panel and the record inhibit plug on the cassette, as shown in the following table. When this indicator is on, recording on tape is prohibited.

REC INHIBIT indicator indications

REC INHIBIT switch position	State of the record inhibit plug on the cassette	REC INHIBIT indicator state
ON	Record inhibit/permit	Lit
OFF	Record inhibit	Lit [a]
	Record permit	Off

a) It is possible to make a setting (extended menu item 107) so that in this case the indicator flashes.

❸ PLAYER button and RECORDER button

When you carry out editing using a VTR connected to the REMOTE 1-IN(9P) or REMOTE 1-OUT(9P) connector as the player and this unit as the recorder, these buttons select which VTR tape transport operations apply to.

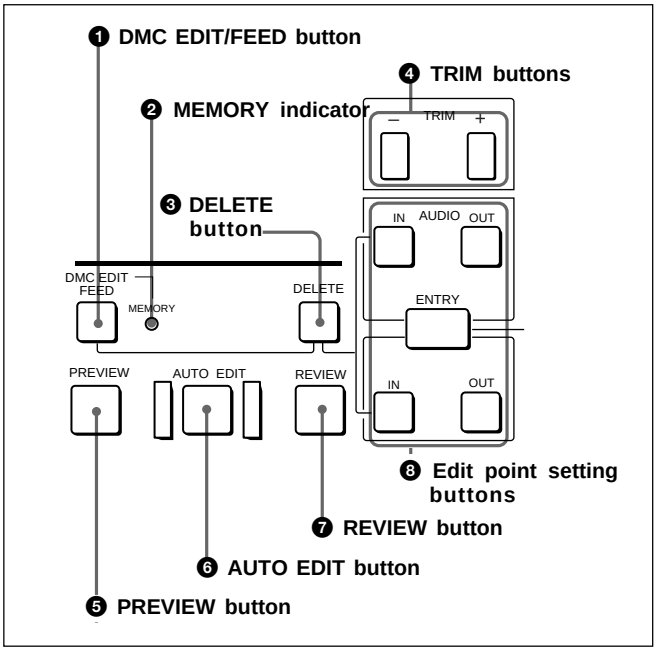
PLAYER: The editing control buttons and tape transport buttons on this unit control the external player VTR.

RECORDER: The editing control buttons and tape transport buttons on this unit control the recorder, that is to say, this unit.

When this unit is being used in standalone mode, neither button functions.

1) Servo lock: This refers to the synchronization of the phase of the drum rotation and the reference signal for the tape transport position, so that the video heads can trace the same pattern on the tape for playback or recording.

4 Editing control section



❶ DMC EDIT/FEED button

Press this button to carry out recording of playback at any speed between –1 and +2 times normal, automatic playback, and automatic editing.
For playback in feed mode, hold down this button and press the PLAY button.
Playback in feed mode requires a setting of extended menu item 111.

❷ MEMORY indicator

When memorizing the playback speed using the DMC EDIT button, this indicator flashes as the playback speed is captured to memory, and lights continuously once the speed is captured.

❸ DELETE button

This deletes an existing edit point.
Hold down this button and press the IN, OUT, AUDIO IN, or AUDIO OUT button which is lit, indicating an existing edit point, to delete the corresponding edit point. The button either goes off or flashes. When the button flashes, it is necessary to set the deleted edit point again.

❹ TRIM buttons

Use these buttons to trim an edit point, once set, to single-frame precision.
Hold down the IN, OUT, AUDIO IN, or AUDIO OUT button, and press one of these buttons. The + button advances the corresponding edit point by one frame, and the – button sets it back by one frame.
Pressing one of these buttons while holding down the PLAY button adjusts the tape speed by +8% or –8% correspondingly. (Capstan override function)

❺ PREVIEW button

After edit point setting, to preview the editing results on the monitor before recording, press this button, turning it on.
If the IN point is not set, the preview is carried out with the point where you pressed this button as the IN point.
During the preview it is lit, and when the preview ends it flashes.

❻ AUTO (automatic) EDIT button

After edit point setting, to carry out automatic editing (recording), press this button, turning it on.
If the IN point is not set, the automatic editing is carried out with the point where you pressed this button as the IN point.
If you pressed the PREVIEW button to carry out a preview, when the preview ends it flashes.

❼ REVIEW button

Use this button to carry out a review of the editing results after carrying out automatic editing.

❽ Edit point setting buttons

AUDIO IN button and AUDIO OUT button

In insert editing, to set an audio IN point or audio OUT point separate from the corresponding video edit point, hold down the AUDIO IN button or AUDIO OUT button, and press the ENTRY button.
After you have made the setting, pressing the AUDIO IN button or AUDIO OUT button displays the audio IN point or audio OUT point set on the fluorescent display.

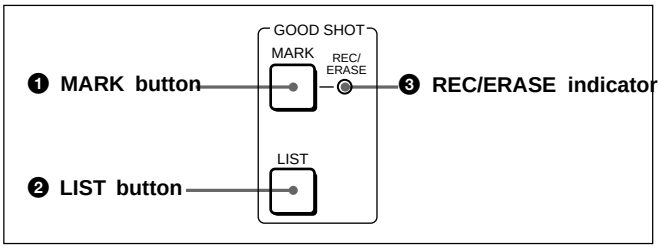
IN button and OUT button

To set a video IN point or OUT point, hold down the IN button or OUT button, and press the ENTRY button.
After you have made the setting, pressing the IN button or OUT button displays the IN point or OUT point set on the fluorescent display.

ENTRY button
Use this for setting edit points and so forth.
- To set a video IN point or OUT point: Hold down the IN button or OUT button, and press this button.
- To set an audio IN point or OUT point: Hold down the AUDIO IN button or AUDIO OUT button, and press this button.

5 Shot mark section

When using a tape with shot markers recorded, you can read out the good shot marks from the tape, by simultaneously pressing the LIST button and either F FWD button or REW button.

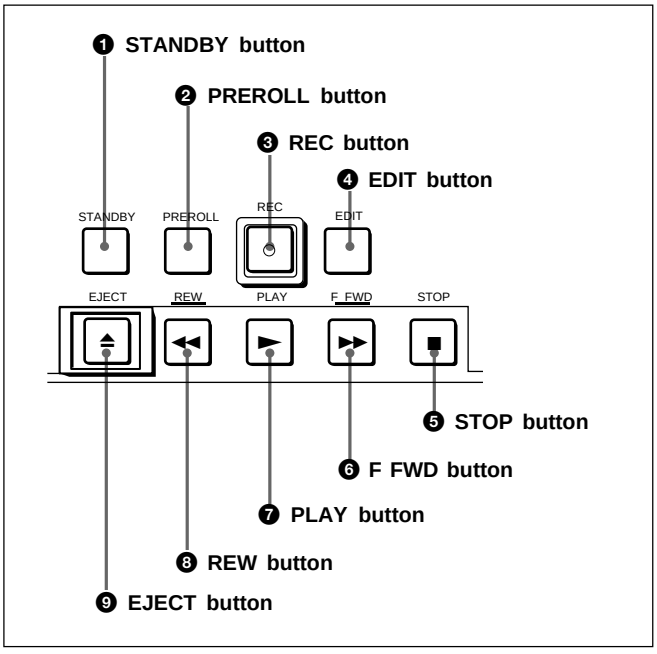


❶ MARK button
Hold this button down for 2 seconds or more, to enable writing, amending, and deleting of shot marks.

❷ LIST button
Use this button to read in and list shot marks.

❸ REC/ERASE indicator
This lights in the state in which writing, amending, and deleting of shot marks is enabled.

6 Tape transport control section



❶ STANDBY button
When a cassette is inserted and this button is off, to put the VTR in standby mode, press the button, turning it on.
In standby mode, the drum is rotating and the tape is in contact with the drum. As a result, recording or playback can start immediately.
To end standby mode, press the STANDBY button, turning it off.
If 8 minutes (value can be varied using extended menu item 501) elapse in standby mode, the unit automatically switches out of standby mode to protect the tape.

Fault display function
When an analog-recorded Betacam SP tape is inserted, pressing the PLAY button causes the STANDBY button to flash.

❷ PREROLL button
Press this button to cue up to the preroll point (before the IN point by the time set as the preroll time) on the tape. You can change or select the preroll time and the state of the unit at the end of preroll ("stop mode" [1)] or still playback mode) using basic menu item 001 or extended menu item 401.

1) Stop mode: the state in which the device currently the subject of operation is stopped, and the STOP button is lit.

Cuing up edit points
Hold down the IN, OUT, AUDIO IN, or AUDIO OUT button while pressing this button to cue up to the corresponding edit point.

❸ REC (record) button
To start recording, press this button together with the PLAY button, turning it on.

Monitoring in E-E mode
When the unit is in stop mode, when you press this button it lights, and you can monitor the video and audio in E-E mode. To return to the original state, press the STOP button.
During playback, search, fast forward, or rewind, while this button is held down you can monitor the video and audio in E-E mode. In this case the button does not light.

❹ EDIT button
To carry out manual editing, press this button simultaneously with the PLAY button.

Monitoring in E-E mode
When the unit is in stop mode, when you press this button it lights, and you can monitor the input signal selected with the ASSEMBLE button or INSERT button in E-E mode. To return to the original state, press the STOP button. During playback, search, fast forward, or rewind, while this button is held down you can monitor the video in E-E mode.

❺ STOP button
To stop recording or playback, press this button, turning it on.
When you stop playback, the unit switches either to still playback or to E-E mode according to setup menu settings, and the settings of the PB.EE button and PB button.

Fault display function
This flashes in the following cases related to reference signals:
- When the OUT REF switch on the subsidiary control panel is set to INPUT VIDEO, and there is no input video signal.
- When the OUT REF switch on the subsidiary control panel is set to REF, and there is no external reference signal input or the input external reference signal is not synchronized to the input video signal.

❻ F FWD (fast forward) button
To fast forward the tape, press this button, turning it on.

❼ PLAY button
To start playback, press this button, turning it on.

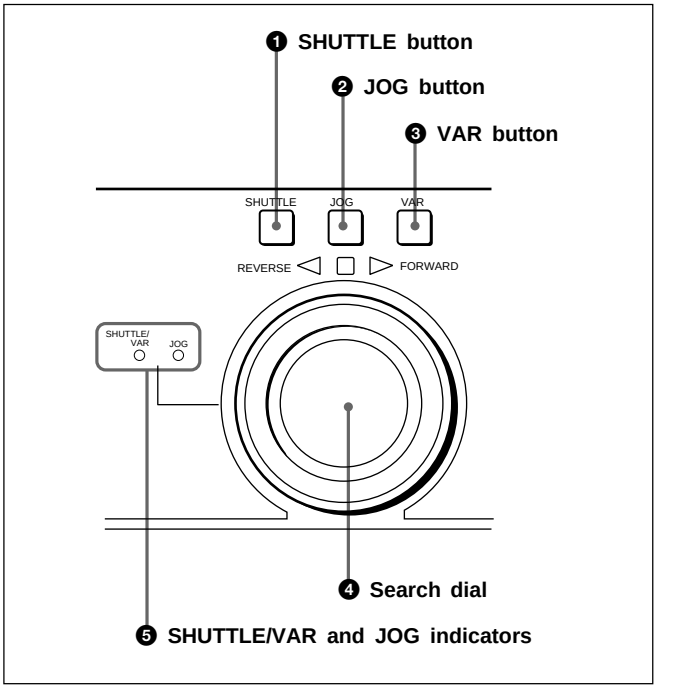
To operate in capstan override mode
Hold down this button, and turn the search dial.

For details of capstan override mode, see the item relating to the search dial in the next page.

❽ REW (rewind) button
To rewind the tape, press this button, turning it on.

❾ EJECT button
To eject the cassette, press this button. While the cassette is being ejected, this button lights.

7 Search control section



❶ SHUTTLE button
To use the search dial for playback in shuttle mode, press this button, turning it on.

For details of playback in shuttle mode, see the item for the search dial ❹.

❷ JOG button

To use the search dial for playback in jog mode, press this button, turning it on.

For details of playback in jog mode, see the item for the search dial ❹.

❸ VAR (variable) button

To use the search dial for playback in variable speed mode, press this button, turning it on.

For details of playback in variable mode, see the item for the search dial ❹.

❹ Search dial

Turn this to carry out playback in the modes shown in the following table. Turning the dial clockwise lights the ▷ indicator and plays back in the forward direction. Turning the dial counterclockwise lights the ◁ indicator and plays back in the reverse direction. When the tape is stopped, the □ indicator lights. Pressing the dial toggles between shuttle and jog modes or between variable and jog modes.
You can carry out noiseless playback in the range of –1 times to +2 times normal speed when using a Betacam SX format tape.

Playback modes using the search dial

Playback mode	Operations and functions
Shuttle	Press the SHUTTLE button or the search dial so that the SHUTTLE button lights, then turn the search dial. Playback is carried out at a speed determined by the position of the search dial. The playback speed range is –78 to +78 times normal speed. The search dial has detents at the still position and at ±5 times normal speed. The maximum shuttle mode playback speed can be changed by changing the setting of item 102 in the extended menu (see page 7-9).
Jog	Press the JOG button or the search dial so that the JOG button lights, then turn the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed range is –1 to +1 time normal speed: The search dial has no detents.
Variable speed	Press the VAR button, turning it on, then turn the search dial. You can control the playback speed finely (51 steps) in the range of –1 times to +2 times normal speed. The search dial has detents at the still position and at the normal speed position.
Capstan override	Hold down the PLAY button and turn the search dial to adjust the playback speed in the range of ±15%. Use this for phase adjustment between this unit and an external connected device.

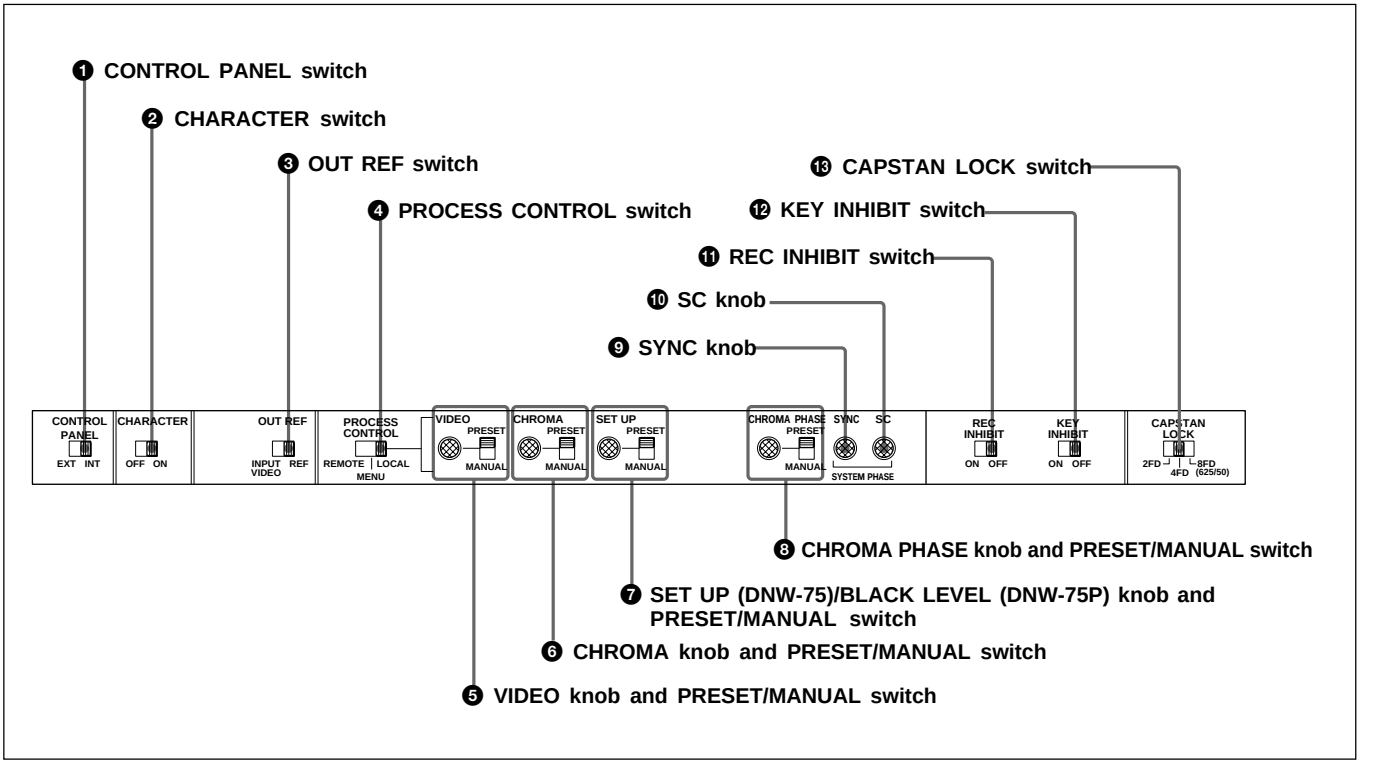
Changing the setting of extended menu item 101 enables you to use the search dial alone to select shuttle/jog/variable speed modes, without using the SHUTTLE, JOG, and VAR buttons.

❺ SHUTTLE/VAR and JOG indicators

When searching in shuttle mode, the SHUTTLE/VAR indicator lights, and when searching in jog mode, the JOG indicator lights.

2-1-3 Subsidiary Control Panel

Pull out the lower control panel to reveal the subsidiary control panel.



❶ CONTROL PANEL switch

Select the state of the control panel when this unit is operated.

INT: When operating this unit by its own control panel.

EXT: When the control panel is detached, to operate this unit remotely by a connection to the CONTROL PANEL connector.

The factory default setting is INT.

❷ CHARACTER switch

Select whether or not to superimpose text information such as time code, menu settings, and alarm messages on the video signal output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and SDI OUTPUT 3 (SUPER) connector.

ON: Superimposed text.

OFF: No superimposed text.

The factory default setting is ON.

❸ OUT REF (reference) switch

This switch selects the reference signal for this unit depending on the combination of the setting of extended menu item 309 and the operating state of the unit.

REF: Use the signal input to the REF. VIDEO INPUT connector as the reference signal. During recording input digital audio and video signals must be synchronized with this signal.

INPUT VIDEO: Use the input video signal selected by the VIDEO INPUT SELECT switch as the reference signal.

Note

Operating this switch during playback may cause a momentary interruption of the playback sound.

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❹ PROCESS CONTROL switch

This selects the method of control of the internal digital video processor.

REMOTE: Select this position to use an optional BVR-50/50P Remote Control Unit for remote control of the internal digital video processor.

MENU: Select this position to use setup menus to change the settings for the internal digital video processor.

LOCAL: Select this position to use the subsidiary control panel to change the settings for the internal digital video processor.

❺ VIDEO knob and PRESET/MANUAL switch

The switch makes the selection described immediately below. When it is set to MANUAL, you can use the knob to adjust the video signal output level.

PRESET: Regardless of the position of the knob, the video signal output level is set to the reference value.

MANUAL: You can adjust the video signal output level in the range ±3 dB.
You can change the adjustment range using extended menu item 714.

❻ CHROMA (chrominance) knob and PRESET/MANUAL switch

The switch makes the selection described immediately below. When it is set to MANUAL, you can use the knob to adjust the chrominance signal output level.

PRESET: Regardless of the position of the knob, the chrominance signal output level is set to the reference value.

MANUAL: You can adjust the chrominance signal output level in the range ±3 dB.
You can change the adjustment range using extended menu item 714.

❼ SET UP (DNW-75)/BLACK LEVEL (DNW-75P) knob and PRESET/MANUAL switch

The switch makes the selection described immediately below. When it is set to MANUAL, you can use the knob to adjust the (black) setup level (525/60 system) or black level (625/50 system).

PRESET: Regardless of the position of the knob, the setup level (525/60 system) or black level (625/50 system) is set to the reference value.

MANUAL: You can adjust the setup level (525/60 system) in the range ±30 IRE [1], or the black level (625/50 system) in the range ±210 mV.

❽ CHROMA (chrominance) PHASE knob and PRESET/MANUAL switch

The switch makes the selection described immediately below. When it is set to MANUAL, you can use the knob to adjust the chrominance phase (the phase difference from a burst signal).

PRESET: Regardless of the position of the knob, the chrominance phase is set to the reference value.

MANUAL: You can adjust the chrominance phase in the range ±30˚.

❾ SYNC knob

This adjusts the output signal sync phase with respect to the input reference signal to this unit, in a range of ±15 µs.

Use this adjustment when the output phase of this unit is not accurately aligned with the reference signal phase, or when carrying out special effects editing with this unit and other VTRs connected to a switcher or other equipment.

❿ SC (subcarrier) knob

This adjusts the output signal subcarrier phase with respect to the input reference signal to this unit, in a range of ±200 ns.

For editing with composite signals, use this adjustment when the output phase of this unit with respect to the phase of the reference signal is not accurately aligned with the subcarrier phase. This adjustment does not affect the output SCH (subcarrier - sync) phase, which remains constant.

1) IRE: A unit for representing a video level laid down by the IRE (Institute of Radio Engineers). The IRE is now the IEEE (Institute of Electrical and Electronic Engineers).

⓫ REC (record) INHIBIT switch

When this switch is in the ON position, the REC INHIBIT indicator in the lower control panel lights, and recording on tape is no longer possible.

⓬ KEY INHIBIT switch

When this switch is in the ON position, the KEY INHIBIT indicator in the lower control panel lights, and the buttons in the upper control panel and lower control panel specified by the setting of extended menu item 118 are disabled.

⓭ CAPSTAN LOCK switch

For playback and editing, this switch selects the capstan lock mode.

For DNW-75

2FD: The capstan servo locks every two fields.

- There may be a color framing difference between the tape playback output and the reference signal selected by the OUT REF switch.
- For assemble editing, there may be a color framing discontinuity at edit points.

During playback of a tape recorded with a composite signal as source, there may be a horizontal shift (H shift) of the image. (When extended menu item 712 is set to ON.)

4FD: The capstan servo locks every four fields.

- There is no color framing difference between the tape playback output and the reference signal selected by the OUT REF switch.
- For assemble editing, color framing continuity at edit points is assured.

During playback of a tape recorded with a composite signal as source, no horizontal shift (H shift) of the image occurs.

Select this position for editing and playback of composite signals when video phase continuity at edit points is required, or for A/B roll editing.

8FD (625/50): This position is not normally used in a 525/60 system.

If you select this position in a 625/50 system, the tape playback output is subject to virtual color framing, frame-locked to the reference signal selected by the OUT REF switch. (This unit is not subject to color frame locking to the reference signal.)

For DNW-75P

2FD/4FD: The capstan servo locks every two fields (2FD)/four fields (4FD).

- There may be a color framing difference between the tape playback output and the reference signal selected by the OUT REF switch.
- For assemble editing, there may be a color framing discontinuity at edit points.

During playback of a tape recorded with a composite signal as source, there may be a horizontal shift (H shift) of the image. (When extended menu item 712 is set to ON.)

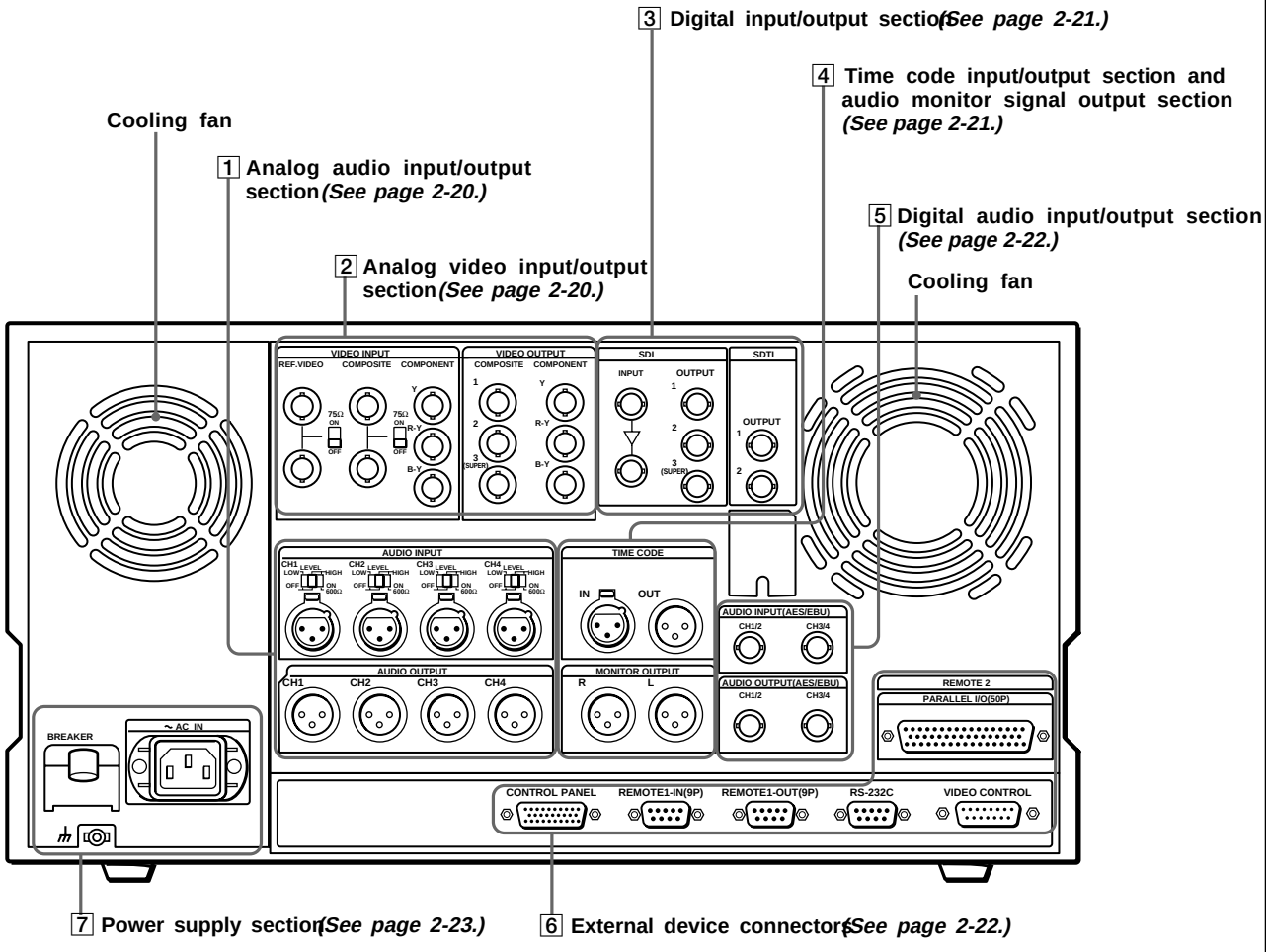
8FD: The capstan servo locks every eight fields.

- There is no color framing difference between the tape playback output and the reference signal selected by the OUT REF switch.
- For assemble editing, color framing continuity at edit points is assured.

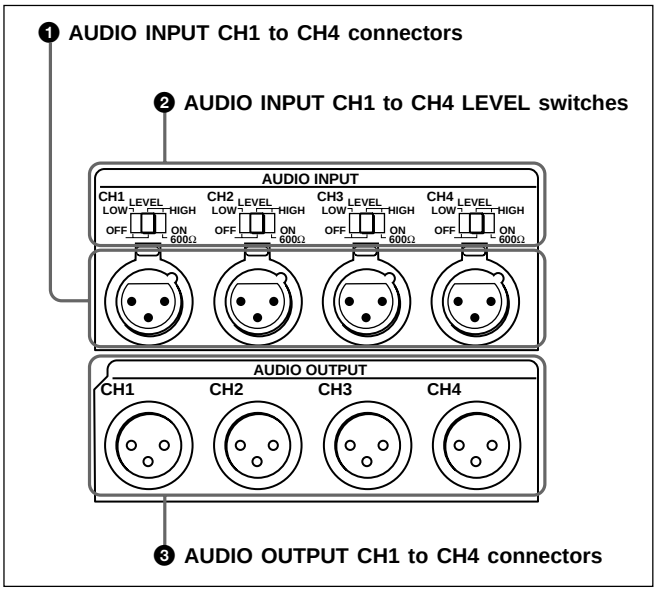
During playback of a tape recorded with a composite signal as source, no horizontal shift (H shift) of the image occurs.

Select this position for editing and playback of composite signals when video phase continuity at edit points is required, or for A/B roll editing.

2-2 Connector Panel



1 Analog audio input/output section


❶ AUDIO INPUT CH1 to CH4 connectors
❷ AUDIO INPUT CH1 to CH4 LEVEL switches
AUDIO INPUT
CH1 LEVEL LOW HIGH OFF ON 600Ω
CH2 LEVEL LOW HIGH OFF ON 600Ω
CH3 LEVEL LOW HIGH OFF ON 600Ω
CH4 LEVEL LOW HIGH OFF ON 600Ω
AUDIO OUTPUT
CH1
CH2
CH3
CH4
❸ AUDIO OUTPUT CH1 to CH4 connectors

❶AUDIO INPUT CH1 to CH4 (channels 1 to 4) connectors (XLR 3-pin, female)
Input analog audio signals to channels 1 to 4.

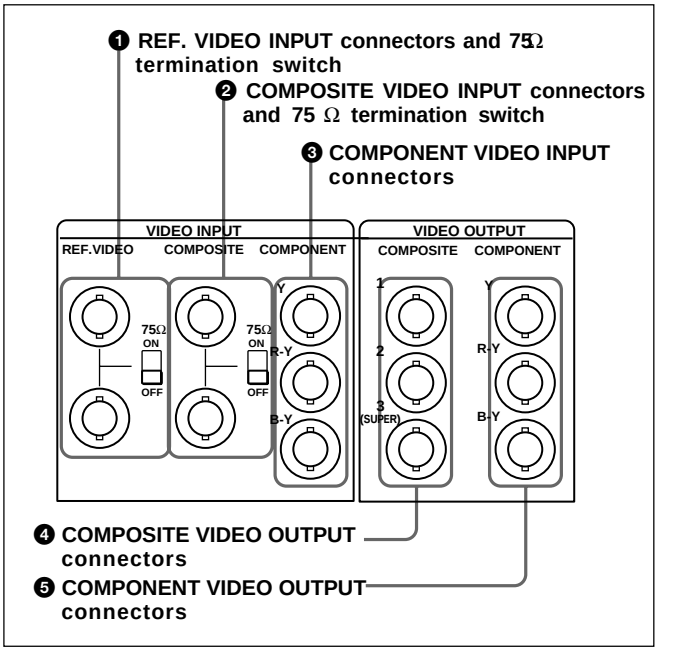
❷AUDIO INPUT CH1 to CH4 (channels 1 to 4) LEVEL switches
Set these for each channel as shown in the following table, according to the audio input levels to the AUDIO INPUT CH1 to CH4 connectors and the impedance.

AUDIO INPUT CH1 to CH4 LEVEL switch settings

Audio input level and impedance		Switch setting
Level	Impedance	
–60 dBu (microphone input)	High impedance (approx. 20 kΩ)	LOW-OFF (left position)
+4 dBu (line audio input)	High impedance (approx. 20 kΩ)	HIGH-OFF (center position)
+4 dBm (line audio input)	600 Ω	HIGH-ON 600 Ω (right position)

❸AUDIO OUTPUT CH1 to CH4 connectors (XLR 3-pin, male)
These output analog audio signals for channels 1 to 4.

2 Analog video input/output section



❶REF. (reference) VIDEO INPUT connectors (BNC type) and 75 Ω termination switch
Input a reference video signal. Input a video signal with chroma burst (VBS) or a monochrome video signal (VS). When using the loop-through connection set the switch to the OFF position, and otherwise to the ON position.

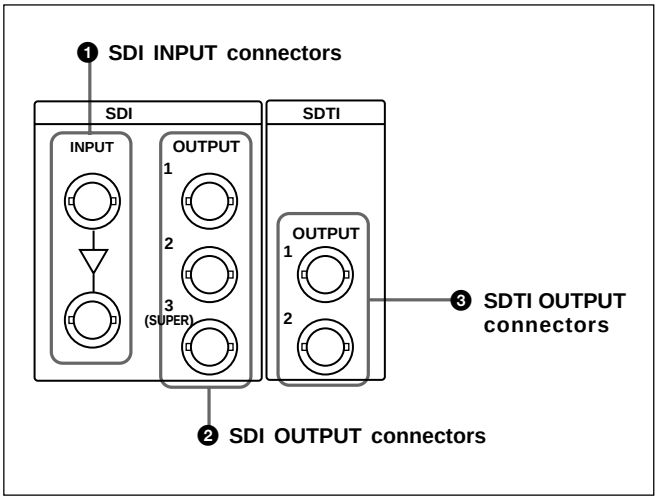
❷COMPOSITE VIDEO INPUT connectors (BNC type) and 75 Ω termination switch
Input analog composite video signals.
When using the loop-through connection set the switch to the OFF position, and otherwise to the ON position.

❸COMPONENT VIDEO INPUT connectors (BNC type)
Input analog component video signals (Y/R–Y/B–Y).

❹COMPOSITE VIDEO OUTPUT connectors (BNC type)
These output analog composite video signals.
When the CHARACTER switch on the subsidiary control panel is set to ON, connector 3 (SUPER) outputs a signal with superimposed time code, menu settings, alarm messages, and other text information.

❺COMPONENT VIDEO OUTPUT connectors (BNC type)
These output analog component video signals (Y/R–Y/B–Y).

3 Digital input/output section

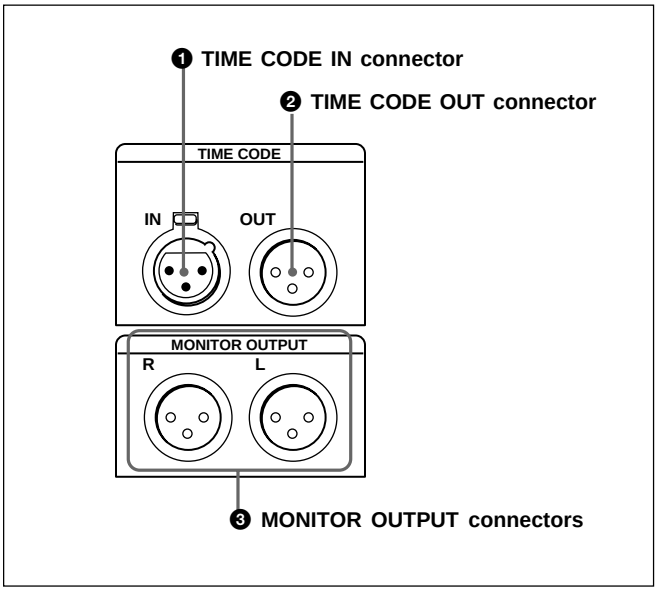


❶SDI (Serial Digital Interface) INPUT connectors (BNC type)
Input D1 format digital video/audio signals. Of the two connectors, the upper one is for input, and the lower one is for a active-through connection.

❷SDI (Serial Digital Interface) OUTPUT connectors (BNC type)
These output D1 format digital video/audio signals. When the CHARACTER switch on the subsidiary control panel is set to ON, connector 3 (SUPER) outputs a signal with superimposed time code, menu settings, alarm messages, and other text information.

❸SDTI (Serial Data Transport Interface) OUTPUT connectors (BNC type)
These output SDTI (SX) video and audio signals. Using these connectors requires the optional BKNW-118 SDTI Output Board.

4 Time code input/output section and audio monitor signal output section

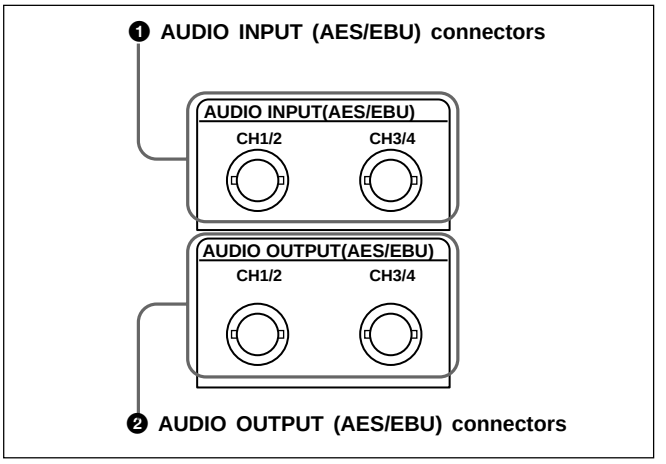


❶TIME CODE IN connector (XLR 3-pin, female)
To record time code from an external device, input a time code signal from the time code output connector of the other device.

❷TIME CODE OUT connector (XLR 3-pin, male)
This outputs a time code according to the operating state of the unit, as follows:
- During playback: the playback time code
  By setting extended menu item 606, you can also output the time code from the internal time code generator locked to the playback time code.
- During recording: the time code generated by the internal time code generator or the time code input to the TIME CODE IN connector.

❸MONITOR OUTPUT connectors (XLR 3-pin, male)
According to the setting of the audio signal selection buttons *(see page 2-4)* on the upper control panel, two (L and R) audio monitor signals are output.

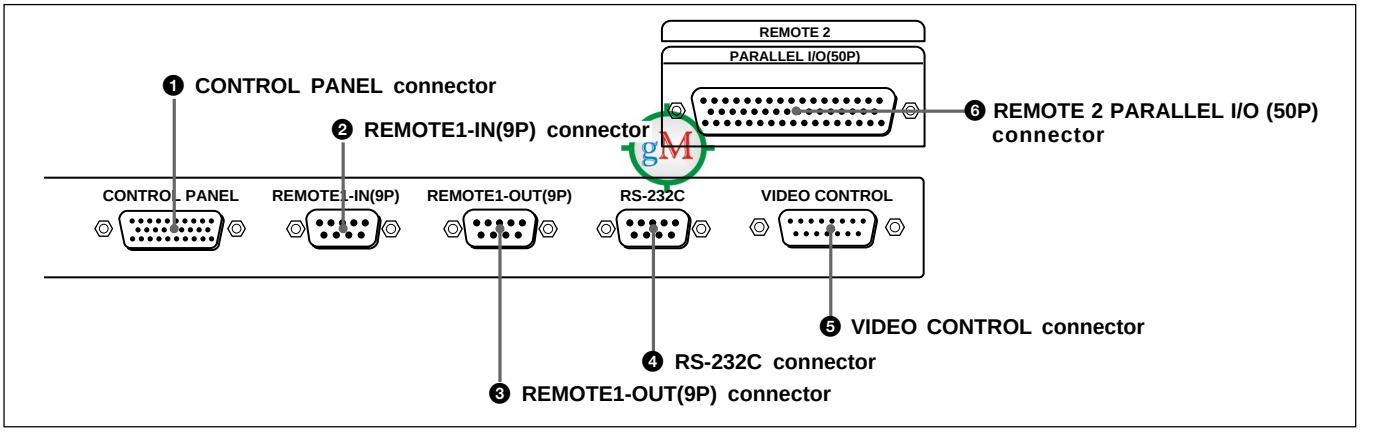
5 Digital audio input/output section



❶AUDIO INPUT (AES/EBU) connectors (BNC type)
Input up to two sets (4 channels: channels 1/2 and 3/4) of AES/EBU format digital audio signals.

❷AUDIO OUTPUT (AES/EBU) connectors (BNC type)
Output up to two sets (4 channels: channels 1/2 and 3/4) of AES/EBU format digital audio signals.

6 External device connectors



❶CONTROL PANEL connector (29-pin)
After disconnecting the control panel from this unit, use this connector to connect the 29-way remote control cable supplied with the control panel extension kit.

❷REMOTE1-IN(9P) connector (D-sub 9-pin)
When using this unit together with another DNW-75/75P or a D-1, D-2, or Betacam VTR, and a BVE-series BVE-900/910/2000/9000/9000P/9100/9100P or other editor, connect the supplied 9-pin remote control cable from the other unit to this connector. The IN(9P) and OUT(9P) connectors provide a loop-through connection for remote control signals.

❸REMOTE1-OUT(9P) connector (D-sub 9-pin)
This provides the loop-through output for remote control signals from the REMOTE1-IN(9P) connector ❷.

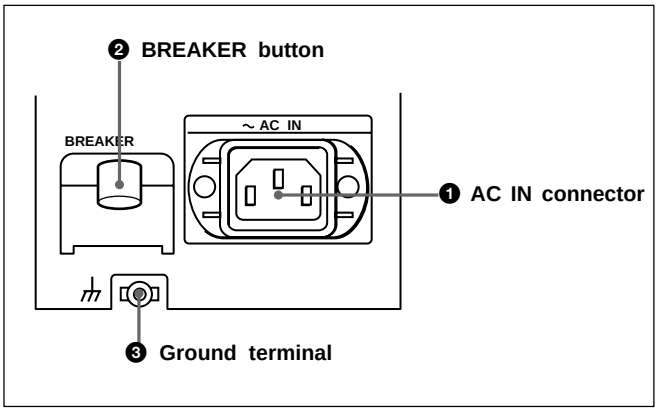
❹RS-232C connector (D-sub 9-pin)
Use this for monitoring and diagnosis of the state of this unit from an external computer, using ISR (Interactive Status Reporting).

❺VIDEO CONTROL connector (D-sub 15-pin)
For remote control of the internal digital video processor, connect an optional BVR-50/50P Remote Control Unit or similar.
Always power off this unit before connecting the remote control unit.

❻REMOTE 2 PARALLEL I/O (50P) connector (D-sub 50-pin)
Connect remote control signals from an external device.

For details, refer to the Installation Manual.

7 Power supply section



❶AC IN connector
Use the optional power cord to connect this to an AC outlet.

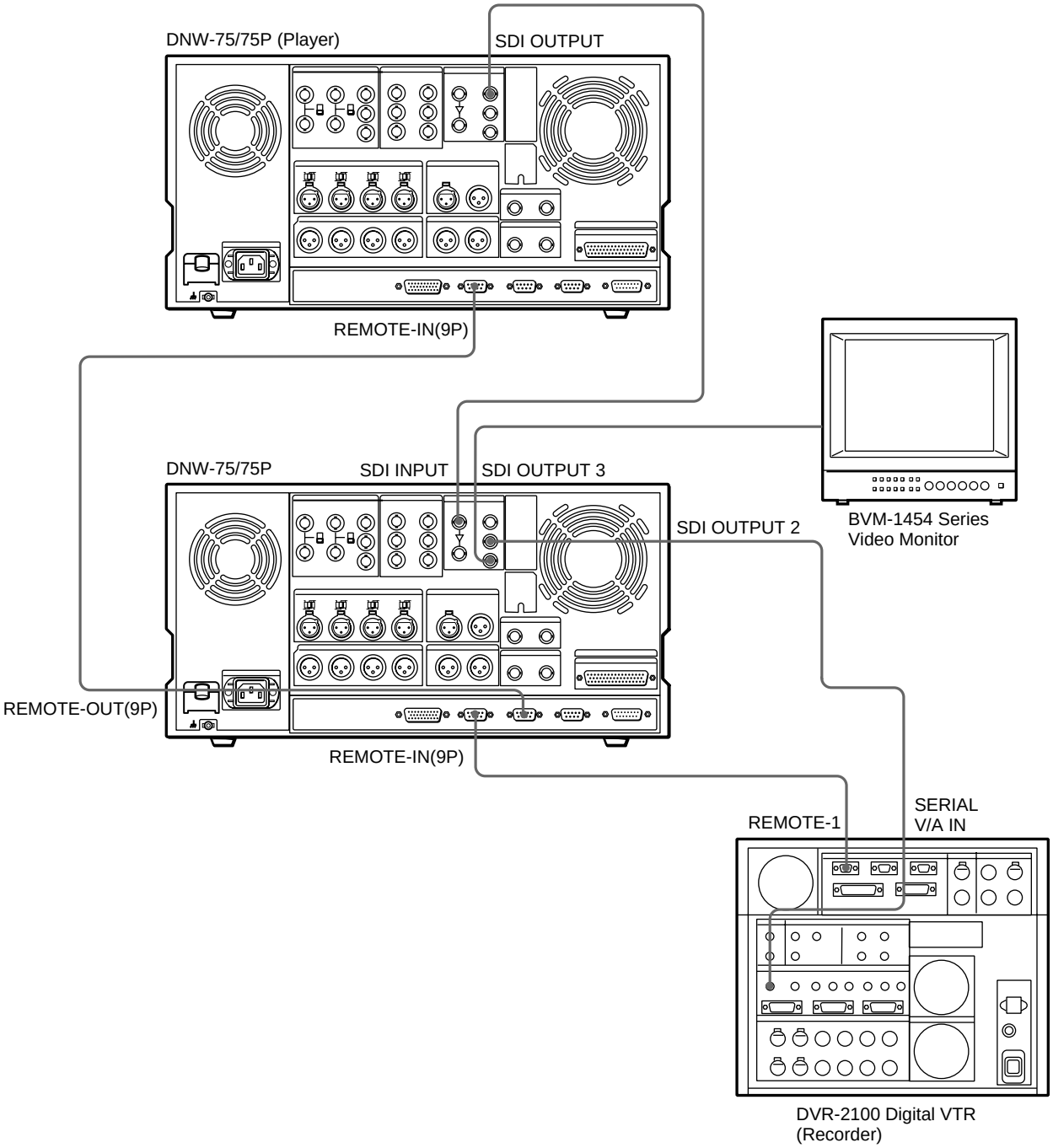
❷BREAKER button
This jumps out if an excess current flows on the primary side of the AC power circuit.

❸Ground terminal
Connect this to ground.

3-1 Connections to External Devices

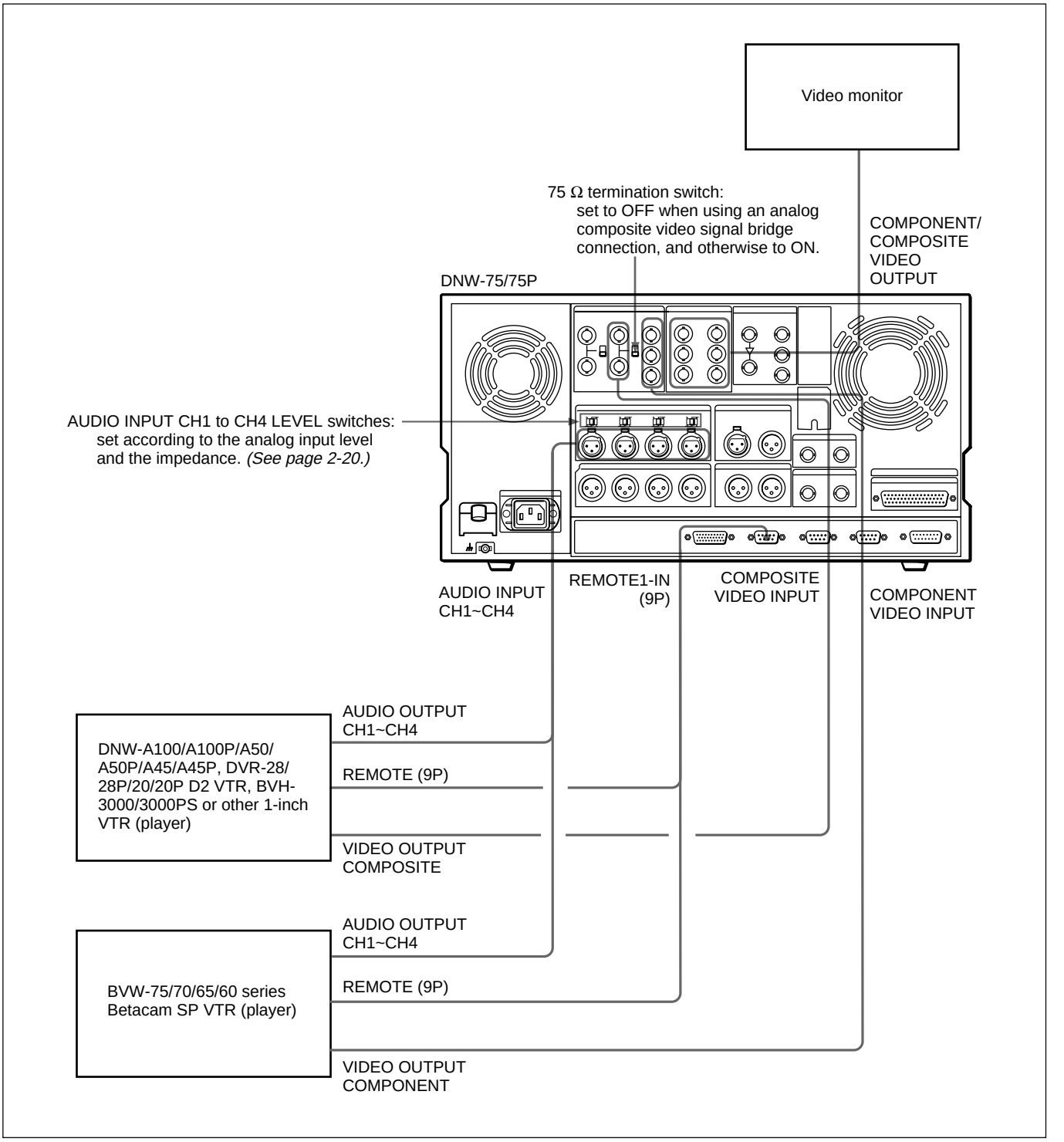
3-1-1 Connections to Digital Devices

The following example shows the connections with another DNW-75/75P as a player and a DVR-2100 D1 component digital VTR as recorder.



3-1-2 Connections to Analog Devices

The following example shows the connections with a Betacam SP VTR, 1-inch VTR, D2 VTR, and so forth for recording analog audio and video signals.



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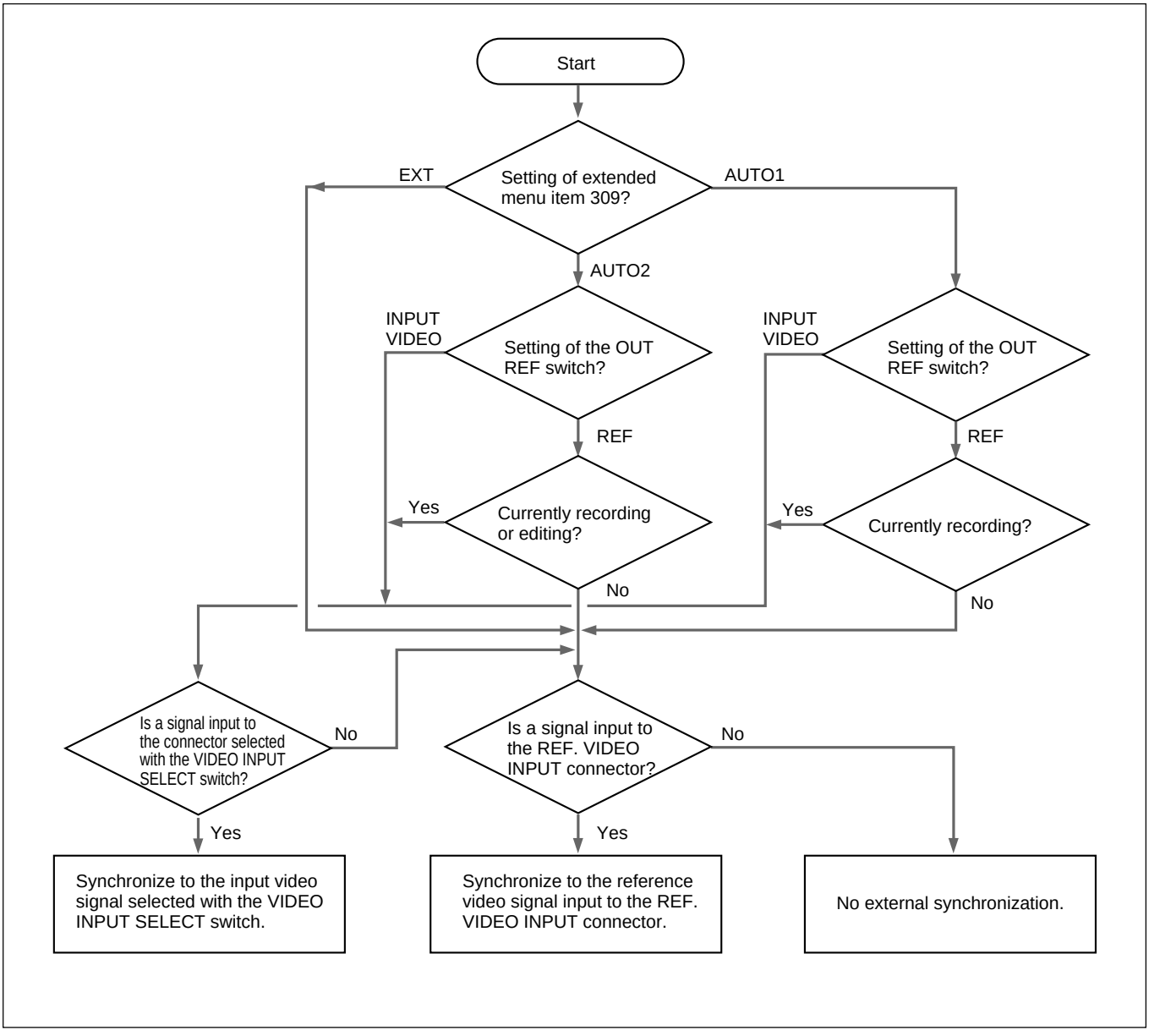
3-2 Reference Signals for Video Output and Servo System

This section describes how reference signals for the video output signals and servo system are selected.

The output from the internal reference video signal generator is supplied to the output video signal and servo circuits as a reference signal.

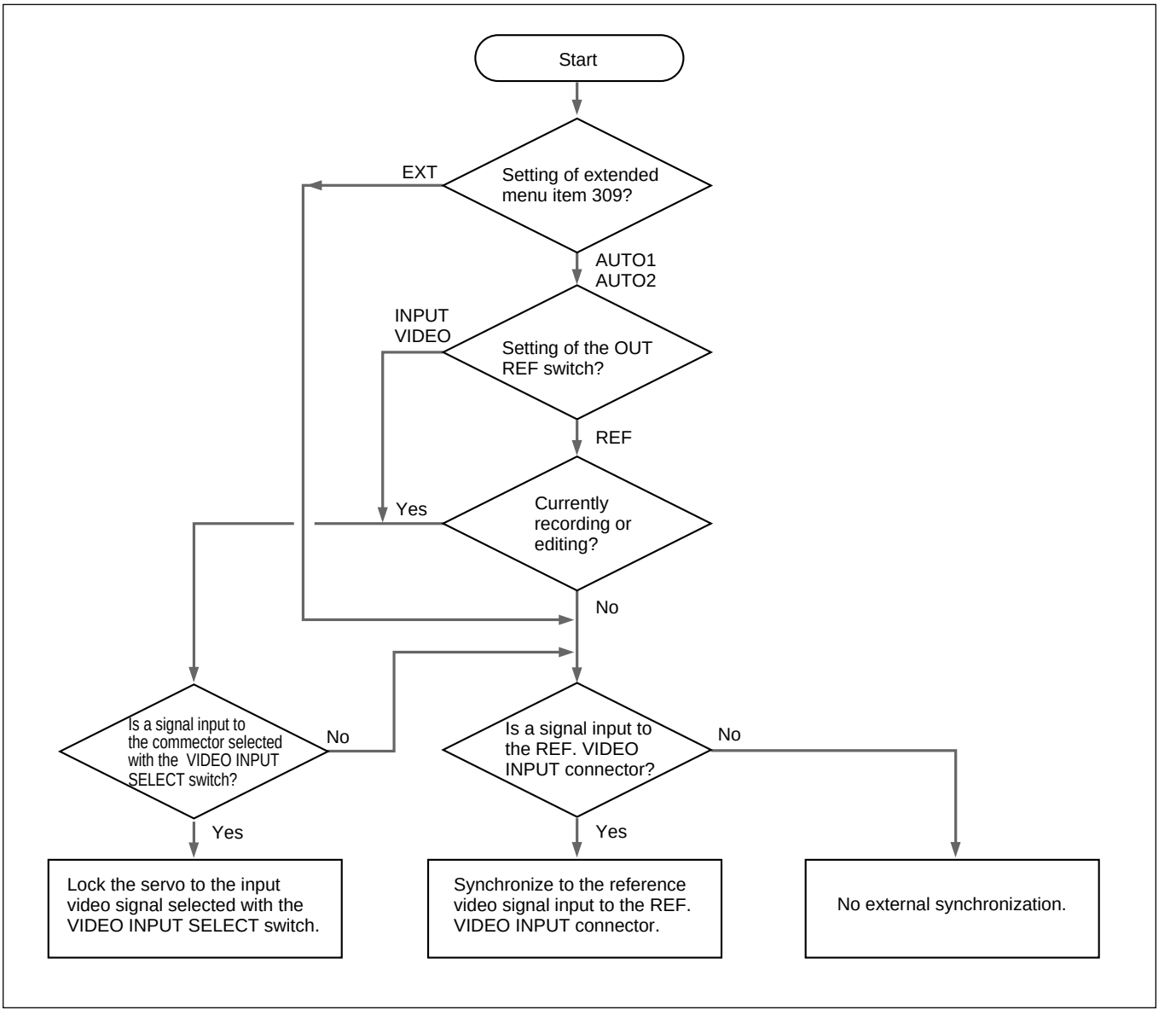
3-2-1 External Sync Signal for the Internal Reference Video Signal Generator

The internal reference video signal generator is synchronized either to a reference video signal or to an input video signal. Depending on the settings of the OUT REF switch on the subsidiary control panel and extended menu item 309, and the input signal selection, the external synchronization status is as shown in the following flowchart.



3-2-2 Reference Signal for the Servo System

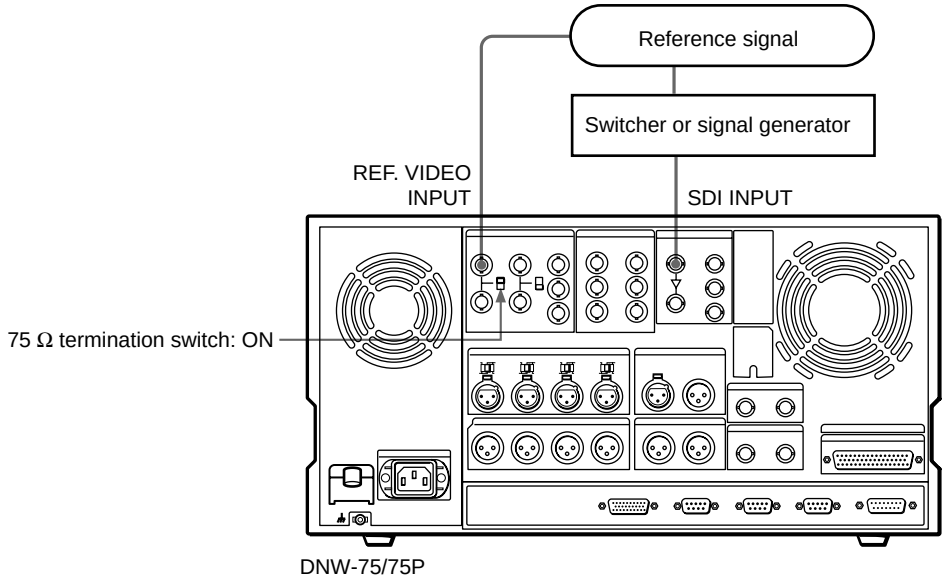
The VTR automatically selects either the input video signal or the output from the internal reference video signal generator as the reference signal for the servo system. Which of the two signals is selected depends on the operational status of the VTR, as shown in the following flowchart.


Start
Setting of extended menu item 309?
EXT
AUTO1
AUTO2
Setting of the OUT REF switch?
INPUT VIDEO
REF
Currently recording or editing?
Yes
No
Is a signal input to the commector selected with the VIDEO INPUT SELECT switch?
No
Yes
Lock the servo to the input video signal selected with the VIDEO INPUT SELECT switch.
Is a signal input to the REF. VIDEO INPUT connector?
No
Yes
Synchronize to the reference video signal input to the REF. VIDEO INPUT connector.
No external synchronization.

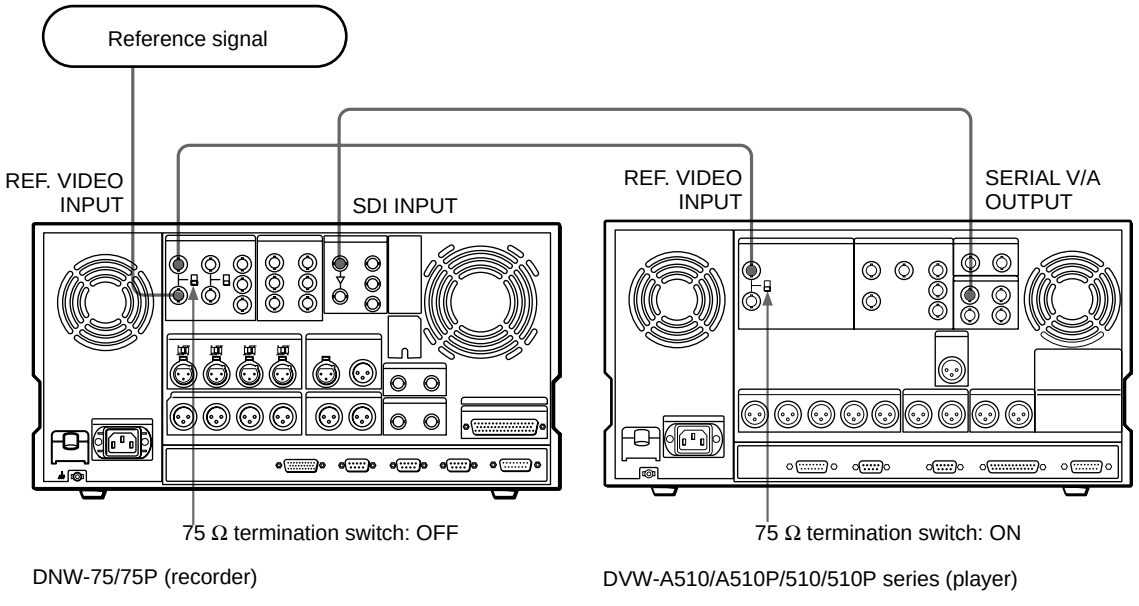
3-2-3 Connecting Reference Signals

Connect reference signals as shown below, according to the way in which the unit is to be used.

• Connections for recording from a switcher or signal generator

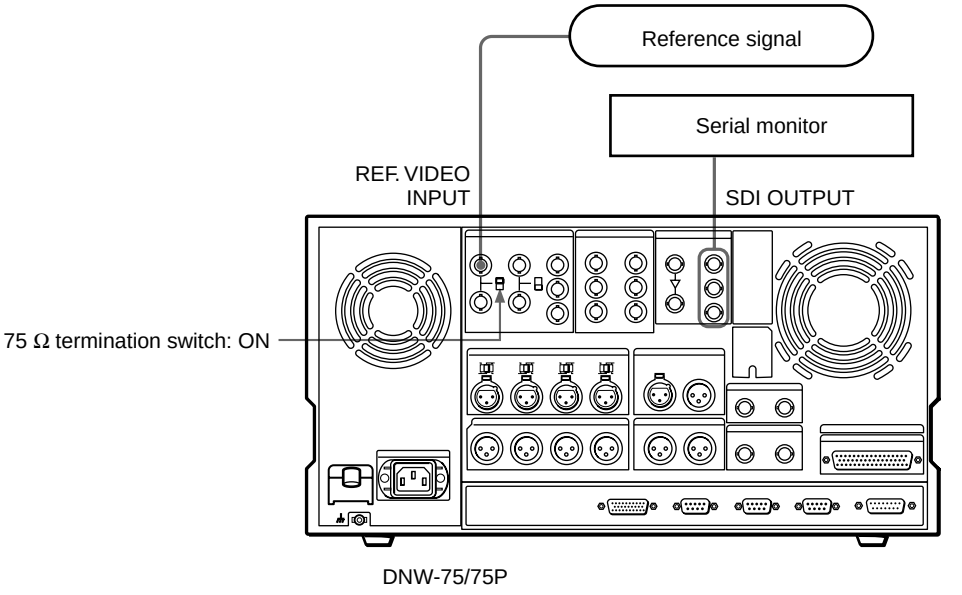


• Connections for recording from an external VTR (player)



3-2 Reference Signals for Video Output and Servo System

• Connections for playback



3-3 Setup

The principal setup operations before operating this unit can be carried out using setup menus.
The setup menus of this unit comprise a basic menu and an extended menu. The contents of these menus are as follows.

Basic menu:

- Items relating to the hours meter
- Items relating to operation
- Items relating to menu banks

Extended menu:

- Items relating to the control panels
- Items relating to the remote control interface
- Items relating to editing operations
- Items relating to preroll
- Items relating to tape protection
- Items relating to the time code generator
- Items relating to video control
- Items relating to audio control
- Items relating to digital processing

For detailed information about the items, except for the basic menu items relating to the hours meter, of these menus and how to use them, see Chapter 7, "Menu System".
For details of the basic menu items relating to the hours meter, see Section 8-5-1, "Digital Hours Meter" (page 8-4).

This unit allows four different sets of menu settings to be saved in what are termed "menu banks" numbered 1 to 4. Saved sets of menu settings can be recalled for use as required.

For more information about the menu banks, see the section "Menu bank operations (menu items B01 to B14)" (page 7-8) .

3-4 Superimposed Character Information

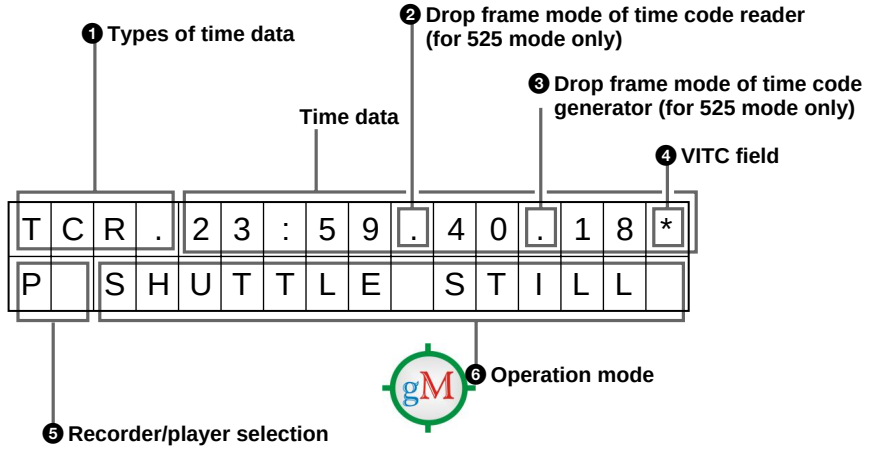
When the CHARACTER switch on the subsidiary control panel is set to ON, the video signal output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or the SDI OUTPUT 3 (SUPER) connector contains superimposed character information, including time code, menu settings, and alarm messages.

Adjusting the character display

You can adjust the position, size and type of the superimposed characters using the basic menu.

For details of the basic menu, see Section 7-2-1, "Items in the Basic Menu" (page 7-1).

Information displayed


❶ Types of time data
❷ Drop frame mode of time code reader (for 525 mode only)
❸ Drop frame mode of time code generator (for 525 mode only)
Time data
❹ VITC field
TCR. 23:59.40.18*
P SHUTTLE STILL
gM
❻ Operation mode
❺ Recorder/player selection

Note

The display shown above corresponds to the factory default settings of the unit.
Changing the setting of basic menu item 005 allows different time data to be displayed in the bottom line of the display.

For details of the basic menu, see Section 7-2-1, "Items in the Basic Menu" (page 7-1).

❶ Types of time data

Display	Meaning
CTL	CTL counter data
TCR	LTC reader time code
UBR	LTC reader user's bits
TCR.	VITC reader time code
UBR.	VITC reader user's bits
TCG	Time code generator time code
UBG	Time code generator user's bits
IN	IN point
OUT	OUT point
AI	Audio IN point
AO	Audio OUT point
DUR	Duration between any two of the four edit points (IN, OUT, audio IN, audio OUT)

Note

If the time data or user's bits cannot be read correctly, they will be displayed with an asterisk. For example, "T*R", "U*R", "T*R." or "U*R.".

❷ Drop frame mode of time code reader (for 525 mode only)

“.”: Drop frame mode
“:”: Non-drop-frame mode

❸ Drop frame mode of time code generator (for 525 mode only)

“.”: Drop frame mode (factory preset)
“:”: Non-drop-frame mode

❹ VITC field

“ ” (blank): Fields 1 and 3
“ * ”: Fields 2 and 4

❺ Recorder/player selection

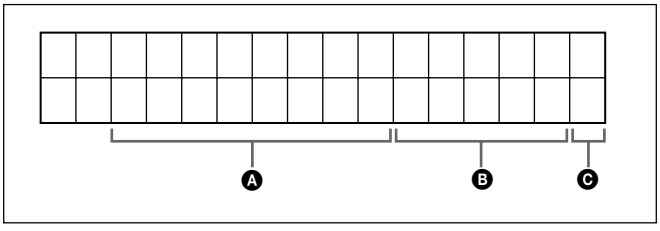
The indication changes as follows, according to the state of the RECORDER/PLAYER buttons on the control panel.

No display: Both the RECORDER and PLAYER indicators are off.
P: The PLAYER indicator is lit.
R: The RECORDER indicator is lit.

❻ Operation mode

The field is divided into three blocks, A, B and C.

- Block A displays the operation mode.
- Block B displays the servo lock status or tape speed.
- Block C displays a ■ mark to indicate an edit section during automatic editing.



Display		Operation mode
Block A	**Block B**	
UNTHREAD		Cassette is not loaded.
STANDBY OFF		Standby off mode
T.RELEASE		Tape tension released
STOP		Stop mode
F.FWD		Fast forward mode
REW		Rewind mode
PREROLL		Preroll mode
PLAY		Playback mode (servo unlocked)
PLAY	LOCK	Playback mode (servo locked)
PLAY	Deviation from normal speed (%)	Capstan override mode
REC		Record mode (servo unocked)
REC	LOCK	Record mode (servo locked)
EDIT		Edit mode (servo unlocked)
EDIT	LOCK	Edit mode (servo locked)
JOG	STILL	A still picture in jog mode
JOG	FWD	Jog mode in forward direction
JOG	REV	Jog mode in reverse direction
SHUTTLE	(Speed)	Shuttle mode
VAR	(Speed)	Variable mode
AUTO EDIT		Automatic editing mode
PREVIEW		Preview mode
REVIEW		Review mode
DMC	(Speed)[a)]	DMC playback speed
D-PREV	(Speed)[a)]	DMC editing preview mode
D-EDIT	(Speed)[a)]	DMC editing mode
DMC-SPD	(Speed)	DMC initial speed setting
PLY-SPD	Variation (%) from normal speed	Capstan-override mode

a) Initial speed settings or stored speed settings

3-5 Cassettes

3-5-1 Cassette Types

This unit uses a 1/2-inch tape width for both recording and playback. You can use Betacam SX cassettes, Betacam SP cassettes (metal tape), or UVW cassettes (metal tape).

Betacam SX cassettes

Small cassettes	BCT-12SX(A)/22SX(A)/32SX(A)/60SX/62SXA
Large cassettes	BCT-64SXL(A)/94SXL(A)/124SXL(A)/184SXL(A)/194SXLA

Betacam SP cassettes (metal tape)

Small cassettes	BCT-5MA/10MA/20MA/30MA
Large cassettes	BCT-5MLA/10MLA/20MLA/30MLA/60MLA/90MLA

UVW cassettes (metal tape)

Small cassettes	UVWT-10MA/20MA/30MA
Large cassettes	UVWT-60MLA/90MLA

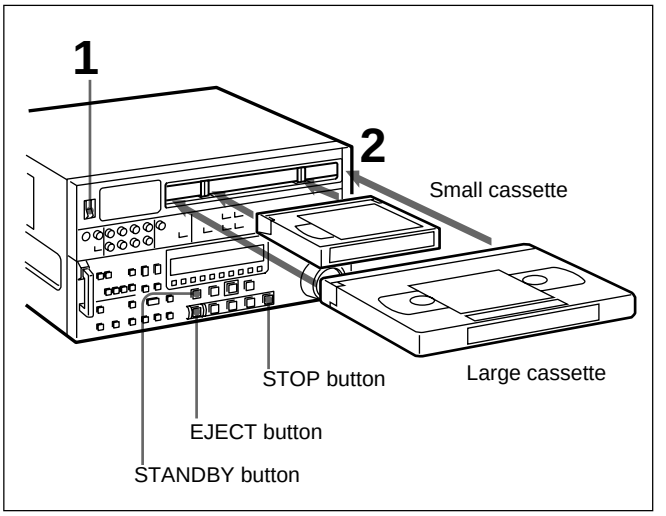
Note

If you insert an oxide tape the unit ejects it automatically.

3-5-2 Inserting and Ejecting Cassettes

It is not possible to insert or eject a cassette unless the unit is powered on.

Inserting a cassette



1 Turn the POWER switch on.

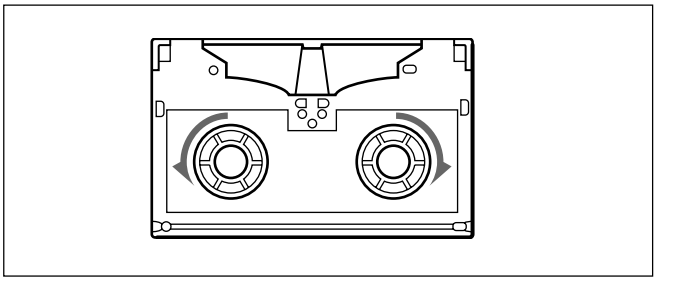
2 Check the following points, before inserting the cassette in the orientation shown in the figure.
- Check that message “ERROR-10” is not shown in the time data display area 1.
- Check that there is no slack in the tape.

The cassette is drawn into the unit, and the STANDBY and STOP buttons light.

If message “ERROR-10” appears in the time data display area 1 , there is moisture condensation in the unit. For steps to take when “ERROR-10” is displayed, see Section 8-4, “Moisture Condensation” (page 8-3).

Removing slack from the tape

Press in one of the reels with a finger, and turn gently in the direction shown by the arrows until there is no slack in the tape.



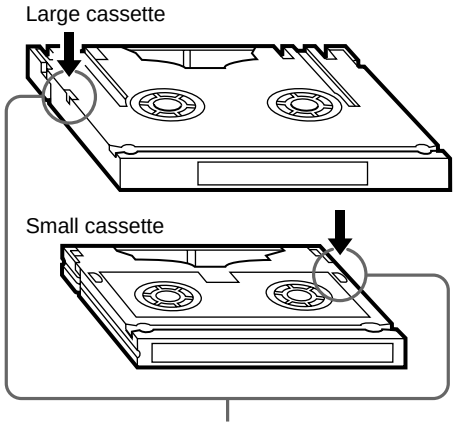
Ejecting a cassette

Press the EJECT button.

If the tape slacks inside the unit, pressing the EJECT button may not eject the cassette. For information about how to remove the cassette in such a case, refer to the Maintenance Manual.

3-5-3 Preventing Accidental Erasure of Recordings

To prevent a tape from being inadvertently erased, press in the red erase-protect plug on the cassette.



Press in the red erase-protect plug. (“ON”)
Return this plug to its original position to enable recording on the tape again. (“OFF”)

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4-1 Recording

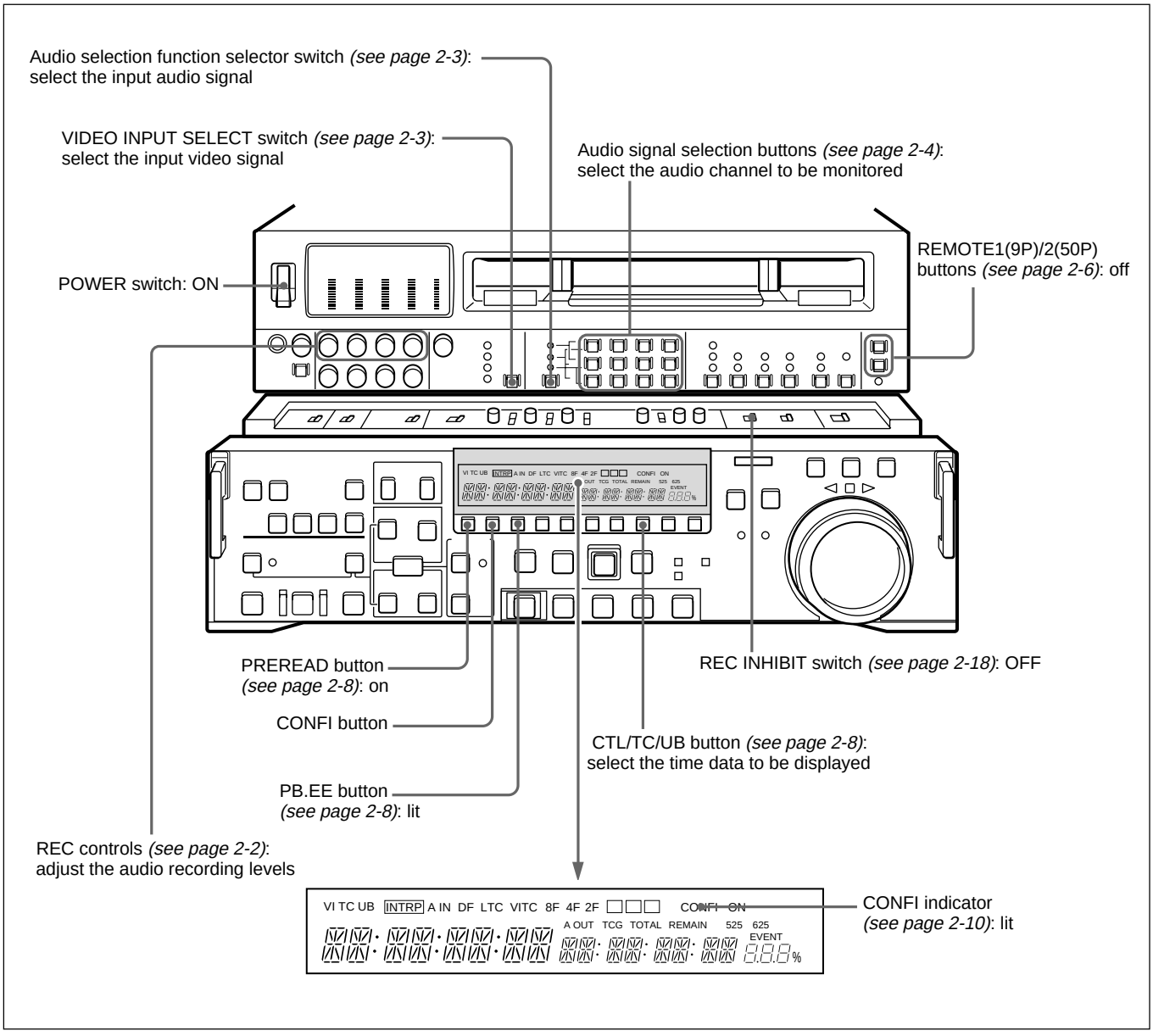
This section describes video and audio recording on the unit.

4-1-1 Preparations for Recording

Switch settings

Before beginning recording, make any necessary switch settings.

For details of the settings of each of the switches, refer to the pages indicated in parenthesis.


Audio selection function selector switch (see page 2-3): select the input audio signal
VIDEO INPUT SELECT switch (see page 2-3): select the input video signal
Audio signal selection buttons (see page 2-4): select the audio channel to be monitored
POWER switch: ON
REMOTE1(9P)/2(50P) buttons (see page 2-6): off
PREREAD button (see page 2-8): on
REC INHIBIT switch (see page 2-18): OFF
CONFI button
CTL/TC/UB button (see page 2-8): select the time data to be displayed
PB.EE button (see page 2-8): lit
REC controls (see page 2-2): adjust the audio recording levels
VI TC UB INTRP A IN DF LTC VITC 8F 4F 2F CONFI ON
A OUT TCG TOTAL REMAIN 525 625 EVENT
CONFI indicator (see page 2-10): lit

Adjusting the audio recording levels

When carrying out audio recording at a reference level

Leave the REC controls pressed in. The audio signals will be recorded at a preset reference level (a reference 0 dB indication for an input of +4 dBm).

Manually adjusting the recording levels

For each channel, pull out the REC control in the upper control panel, and adjust so that the audio level indication is 0 dB for an average volume. Carry out the adjustment in E-E mode.

For details of selecting the E-E mode, see the description of the REC button in the tape transport control section (page 2-14/) and the PB.EE button in the monitor/menu/display setting section (page 2-8).

To change the display range of the audio level indications

Press the DISPLAY FULL/FINE switch *(see page 2-4)*.

To monitor the simultaneous playback of the recorded video and audio signals

Press the CONFI button to light the CONFI indicator. It is now possible to simultaneously monitor the video and audio signals being recorded.
In the editing mode, for the playback interval around an edit operation, CONFI playback is also possible.
While CONFI playback is actually being carried out, the ON indicator lights.

To monitor the video and audio already recorded on a tape

Press the PREREAD button, turning it on.
It is possible to monitor the video and audio already recorded on the tape, before the new recording. (Preread function)

Using the preread function, preread editing is possible. For details, see Section 5-3-5 "Preread Editing" (page 5-13).

To use the emphasis function

To add emphasis to the analog input audio signal, set the extended menu item 817 to ON.
When the signal to which emphasis has been applied is played back, it is automatically subjected to deemphasis processing.
Using the emphasis-deemphasis processing enables the dynamic range to be improved by reducing high-frequency noise.

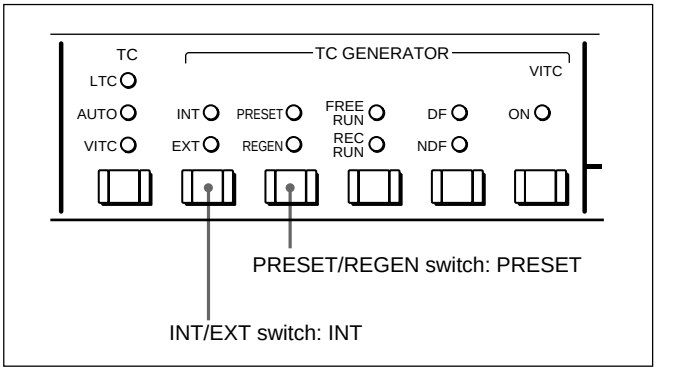
4-1-2 Recording Time Code and User Bit Values

There are three ways of recording time code, as follows:

- Setting an initial value, then recording the output of the internal time code generator
- Recording the output of the internal time code generator synchronized to an external time code generator
- Recording an external time code without modification

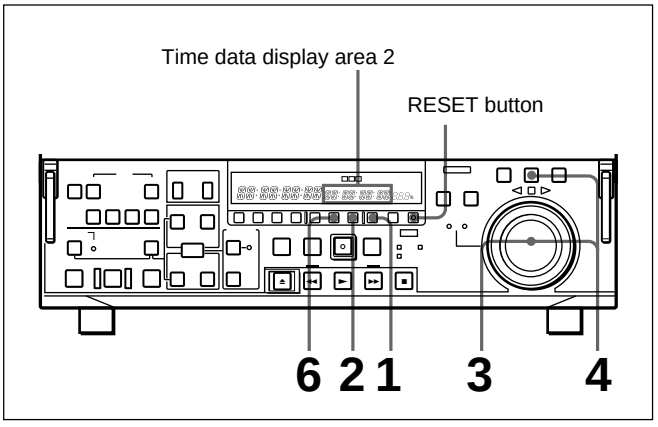
To set an initial value then record the time code

If necessary, change the settings in the time code setting section *(see page 2-5)*.
Set the INT/EXT switch to INT, and the PRESET/REGEN switch to PRESET.



Setting an initial time code value

Use the following procedure.



1 Set the CTL/TC/UB switch to TC.

2 Press the HOLD button.

The button lights, and in time data display area 2, the first digit of the value (8 digits: hours, minutes, seconds, and frames) begins to flash.

To set all digits to zero
Press the RESET button.

3 Turn the search dial to select the digit to be changed.

Turning the search dial clockwise moves the flashing digit position to the right, and turning the search dial counterclockwise moves the flashing digit position to the left.

4 Hold down the JOG button, then turn the search dial to change the value in the flashing digit position.

5 Until all the digits are set as required, repeat steps **3** and **4**.

6 Press the SET button.

The HOLD button goes off.
When the FREE RUN/REC RUN switch is set to FREE RUN, the time code value immediately starts advancing.

Setting the time code value to the real time

With the switches in the time code setting section set as follows, carry out the procedure under the heading above, “To set an initial time code value”. In steps **4** and **5**, set the value slightly after the current time, then carry out step **6** at the instant the real time catches up with the setting.

INT/EXT switch: INT
PRESET/REGEN switch: PRESET
FREE RUN/REC RUN switch: FREE RUN
DF/NDF switch: DF

Setting a user bit value

The user bit values recorded on the time code track provide for eight hexadecimal digits, which can be used to hold the date, time, or other information.
Use the following procedure.

1 Set the CTL/TC/UB switch to UB.

2 Carry out the procedure in steps **2** to **6** under the heading above, “Setting an initial time code value”.
You can set each digit to any hexadecimal value, represented by 0 to 9, and A to F. Hexadecimal digits A to F appear in the seven-segment display as follows.

Digit	A	B	C	D	E	F
Display	A	b	C	d	E	F

Note

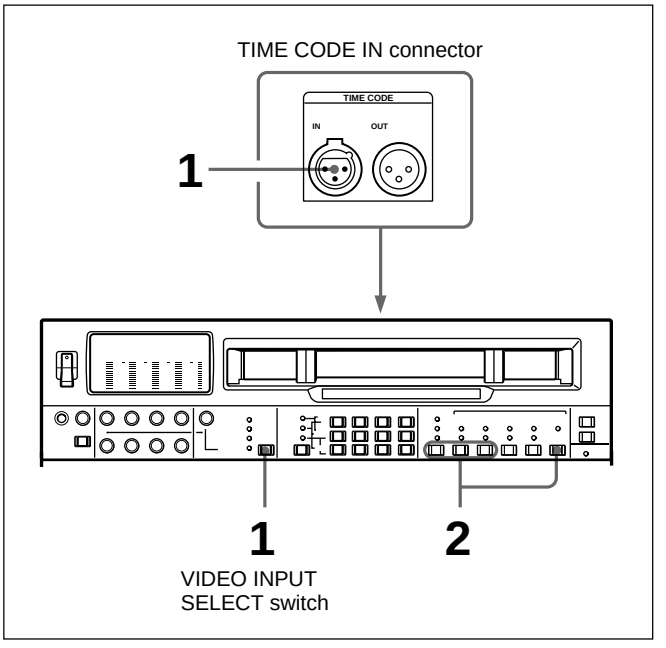
If any of the settings (to write a recording start mark) in item G03 of the shot mark operation menu are set to “ON,” then for 20 frames from each recording, assemble editing, or insert editing start, the user bits are overwritten with the shot mark data.

To synchronize the internal time code generator to an external signal

Use this method to synchronize the time code generators of a number of VTRs, or to record the playback time code signal from an external VTR without deterioration of the signal waveform.
In this case the settings of the FREE RUN/REC RUN switch and DF/NDF switch are ignored.
You can synchronize the internal time code generator to either of the following external time codes.

- The time code output (LTC) of an external time code generator or external VTR connected to the TIME CODE IN connector of the unit
- The time code (VITC) present in a video signal input to the unit

To synchronize the internal time code generator to an external signal, use the following procedure.



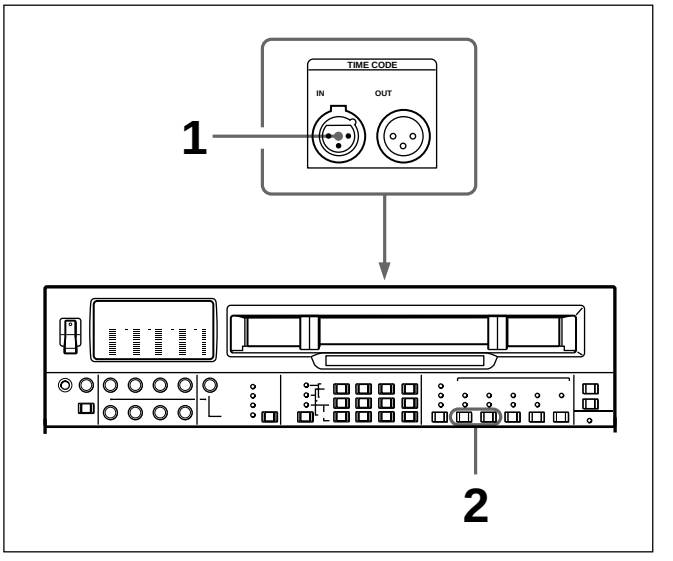
1 • When synchronizing to an external time code output (LTC)
Connect the time code output of the external time code generator or external VTR to the TIME CODE IN connector.
• When synchronizing to the time code (VITC) in an input video signal
With the VIDEO INPUT SELECT switch, select an input video signal containing VITC.

2 Set the switches as follows:
INT/EXT switch: EXT
PRESET/REGEN switch: REGEN
VITC switch: ON (when recording VITC)
TC switch: LTC or VITC according as you are synchronizing to LTC or VITC (If set to AUTO, LTC is used.)

This starts the internal time code generator running in synchronization with the external time code generator.
Once the internal time code generator is synchronized with the external time code generator, even if the external time code generator connection is removed, the internal time code generator continues to run.

To record an external time code without modification

Using this method has no effect on the running of the internal time code generator.
To record the playback time code from an external VTR, the method under the heading above, “To synchronize the internal time code generator to an external signal”, is recommended.

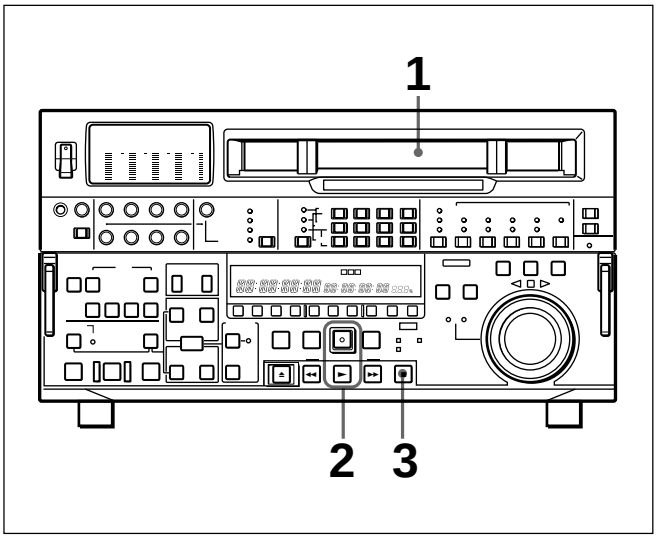


1 Connect the time code output of the external time code generator to the TIME CODE IN connector.

2 Set the switches as follows:
INT/EXT switch: EXT
PRESET/REGEN switch: PRESET

4-1-3 Recording Procedure

To record, use the following procedure.



1 Insert a cassette.

For details, see the section “Inserting a cassette” (page 3-10).

2 Hold down the REC button, and press the PLAY button.

Recording starts, the servo locks, and the SERVO indicator lights.

3 To stop recording, press the STOP button.

If you record to the end of the tape

The tape is automatically rewound, and stops.

4-2 Playback

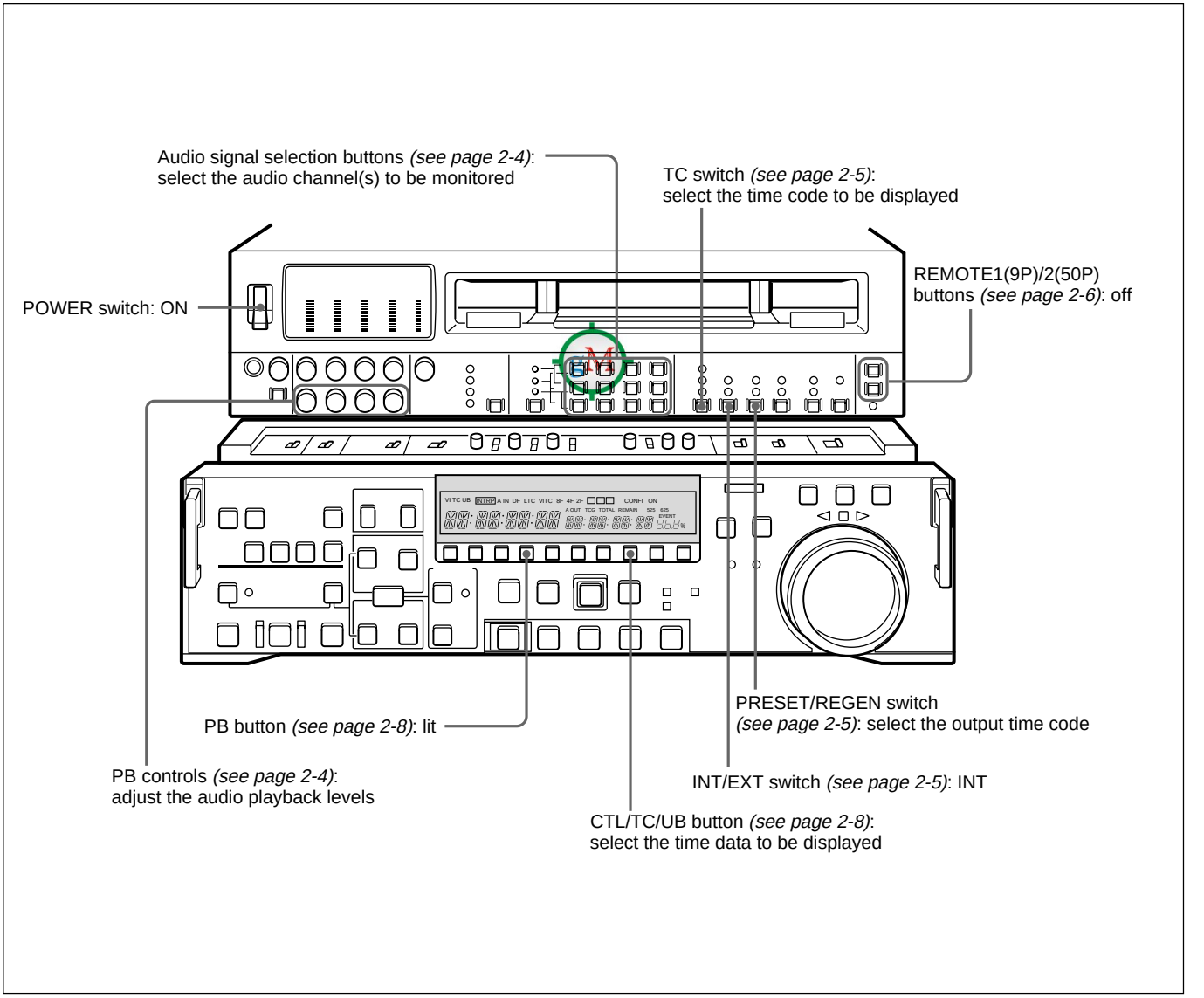
This section describes playback of video and audio.

4-2-1 Preparations for Playback

Switch settings

Before beginning playback, make any necessary switch settings.

For details of the settings of each of the switches, refer to the pages indicated in parenthesis.


Audio signal selection buttons *(see page 2-4)*:
select the audio channel(s) to be monitored
TC switch *(see page 2-5)*:
select the time code to be displayed
REMOTE1(9P)/2(50P)
buttons *(see page 2-6)*: off
POWER switch: ON
PB button *(see page 2-8)*: lit
PRESET/REGEN switch
(see page 2-5): select the output time code
PB controls *(see page 2-4)*:
adjust the audio playback levels
INT/EXT switch *(see page 2-5)*: INT
CTL/TC/UB button *(see page 2-8)*:
select the time data to be displayed

Time data selection

Displayed time data

Use the CTL/TC/UB button to select one of CTL (control), time code, and user bit values. When you select time code, the data displayed is determined by the setting (LTC/AUTO/VITC) of the TC switch as follows.

TC switch setting	Displayed data
LTC	LTC recorded on tape
VITC	VITC recorded on tape
AUTO	LTC or VITC (automatically switched)

Output time code

The settings of the PRESET/REGEN switch and extended menu item 606 determine whether the time code output from the TIME CODE OUT connector is the time code read by the internal time code reader (REGEN), or the playback time code (PRESET).

For details of the PRESET/REGEN switch settings, see page 2-5.

4-2-2 Playback/Feed Play Procedures

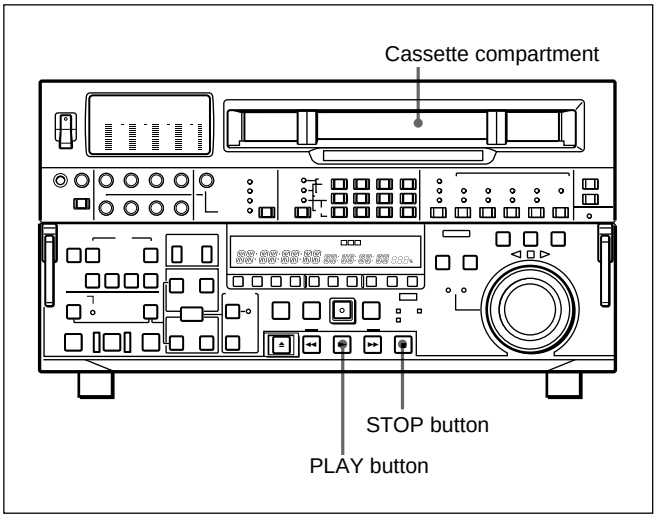
This section describes the following types of playback which the unit can carry out:

- Normal playback
  Playback at normal (×1) speed
- Playback in jog mode
  Variable speed playback, with the speed determined by the speed of turning the search dial
- Playback in shuttle mode
  Variable speed playback, with the speed determined by the angular position of the search dial
- Playback in variable mode
  Variable speed playback, with the speed finely determined by the angular position of the search dial
- Playback using the capstan override function
  The playback speed is adjusted temporarily according to the angular position of the search dial, to align the playback phase with that of another VTR.
- Playback in feed mode
  Playback at any speed selected in the range of 0.1 to 2 times normal speed. High-speed data transfer through the SDTI OUTPUT connectors is possible.
- DMC Playback

Normal playback

First insert a cassette.

For details of how to insert a cassette, see Section 3-5-2, "Inserting and Ejecting Cassettes" (page 3-10).



To start playback

Press the PLAY button.
Playback starts, the servo locks, and the SERVO indicator lights.

To stop playback

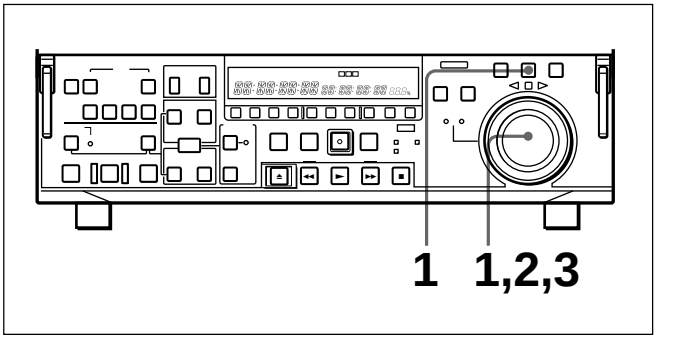
Press the STOP button.

If you play back to the end of the tape

The tape is automatically rewound, and stops.

Playback in jog mode

In jog mode, you can control the speed of playback by the speed of turning the search dial. The playback speed range is ±1 times normal speed.
To carry out playback in jog mode, use the following procedure.



1 Press the JOG button or search dial so that the JOG button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

2 Turn the search dial in the desired direction, at the speed corresponding to the desired playback speed.

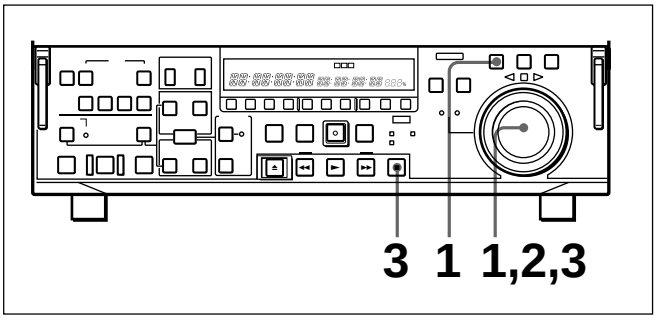
Playback in jog mode starts.

3 To stop playback in jog mode, stop turning the search dial.

The function of the search dial to switch to search mode can be disabled by changing the setting of extended menu item 101.

Playback in shuttle mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is ±78 times normal speed.
There are detents on the search dial at the still position and at ±5 times normal speed.
To carry out playback in shuttle mode, use the following procedure.



1 Press the SHUTTLE button or search dial so that the SHUTTLE button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

2 Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

3 To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

The function of the search dial to switch to search mode can be disabled by changing the setting of extended menu item 101.

To return to normal-speed playback

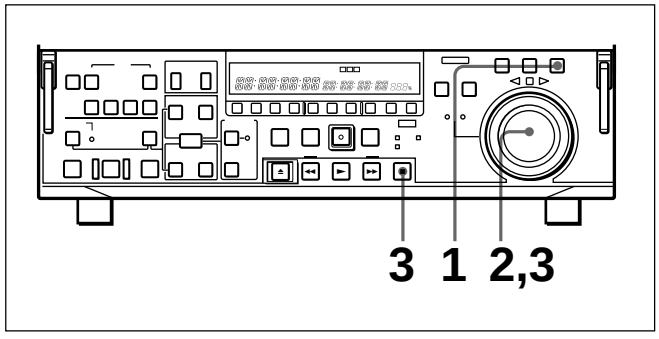
Press the PLAY button.

To alternate between normal-speed playback and shuttle mode playback

Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SHUTTLE buttons alternately.
For intermittent shuttle mode playback, press the STOP and SHUTTLE buttons alternately.

Playback in variable mode

In variable mode, you can finely control (51 steps) the speed of playback in the range of –1 to +2 times normal speed.
There are detents on the search dial at the still position and at ±1 times normal speed.
To carry out playback in variable mode, use the following procedure.



1 Press the VAR button, turning it on.

2 Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in variable mode starts.

3 To stop playback in variable mode, return the search dial to the center position, or press the STOP button.

To return to normal-speed playback

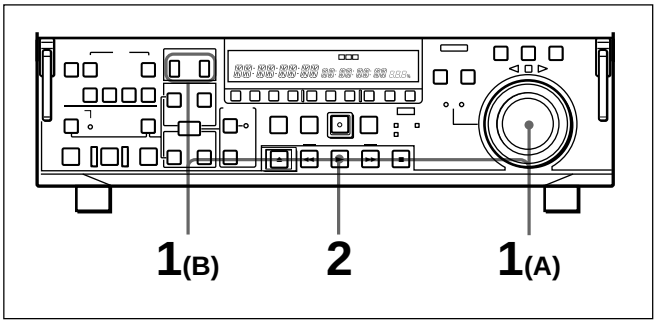
Press the PLAY button.

To alternate between normal-speed playback and variable mode playback

Set the search dial to the position corresponding to the desired variable playback speed, then switch between normal-speed playback and variable playback by pressing the PLAY and VAR buttons alternately.
For intermittent variable mode playback, press the STOP and VAR buttons alternately.

Playback using the capstan override function

You can use the capstan override function to adjust the playback speed temporarily. This function is convenient for playback phase synchronization with another VTR playing back the same program.



1 (A) Hold down the PLAY button, and turn the search dial in the desired direction to adjust the playback speed.
The range of speed adjustment is ± 15% in steps of 1%.

(B) Hold down the PLAY button, and press the TRIM buttons to adjust the playback speed.
The playback speed can be adjusted to ± 8% only.

The SERVO indicator goes off.

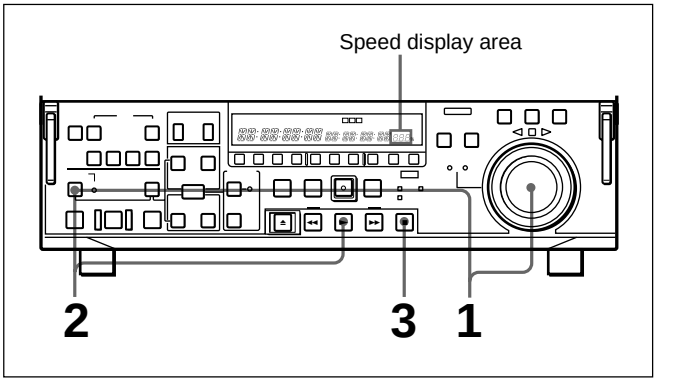
2 When the adjustment is completed, release the PLAY button.

The tape transport returns to normal speed, and the SERVO indicator comes on again.

Carrying out playback in feed mode

When using a Betacam SX tape, you can use feed mode to play back at any speed from 0.1 to 2 times normal. You can select the playback speed in steps of 0.1 times normal speed. The playback output is output from the (optional) SDTI OUTPUT connectors. This therefore allows high-speed dubbing to another device equipped with an SDTI input connector.

Use the following procedure to carry out feed mode playback.



1 Hold down the DMC EDIT/FEED button, and turn the search dial to set the playback speed.

While you hold down the DMC EDIT/FEED button, the playback speed setting for feed mode (initially the maximum setting) appears in the speed display area as a multiple of normal speed. (For example, twice normal speed is shown as “2.00”.)

2 Hold down the DMC EDIT/FEED button, and press the PLAY button.

Both buttons light, and playback in feed mode starts.

3 Where you wish to stop playback, press the STOP button.

Playback stops.

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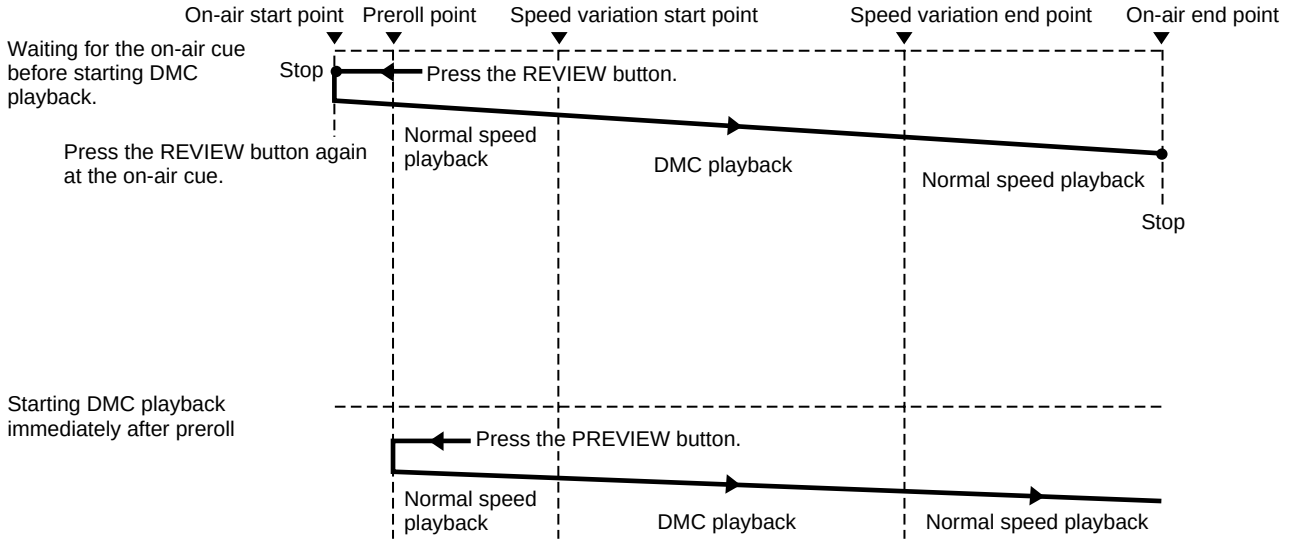
4-2-3 Dynamic Motion Control (DMC) Playback

Overview

DMC playback allows you to vary the playback speed for a certain section of a tape, in variable mode (from –1 to +2 times normal speed), and store the varying speed in memory for later playback at the same varying speed.

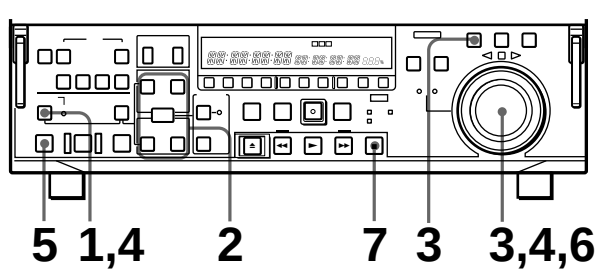
For example, during a live broadcast of a sporting event you can set the start and end points of highlights while recording, and then provide immediate DMC playback of those highlights.

During DMC playback the tape moves as shown in the following figure.



Storing a varying playback speed in memory

To store the playback speed for DMC playback, use the following procedure.



1 Press the DMC EDIT/FEED button, turning it on.

2 Either while playing back the recorded tape, or during recording, press the ENTRY button and each of the following buttons simultaneously, to set the start and end points.
- On-air start point: AUDIO IN button
- Speed variation start point: IN button
- Speed variation end point: OUT button
- On-air end point: AUDIO OUT button

Each press turns the corresponding button on.

3 Press the search dial or the SHUTTLE button or VAR button to enter shuttle/variable mode.

The SHUTTLE/VAR indicator lights.

(Continued)

4 Holding down the DMC EDIT/FEED button, turn the search dial, to set the initial speed at the playback start point.

The speed you set appears in the time counter. During this period the tape does not move. When the initial speed setting is complete, release the DMC EDIT/FEED button.

5 Press the PREVIEW button.

The tape is prerolled and played back at normal speed from the on-air start point to the speed variation start point. On passing the speed variation start point, the MEMORY indicator begins to flash, and playback begins at the speed set in step **4**.

6 Turn the search dial to vary the playback speed.

While the MEMORY indicator is flashing, the speed variations are stored in memory. On passing the speed variation end point, the MEMORY indicator changes from flashing to continuously lit, and the variable speed storing ends.

7 Press the STOP button to stop the tape.

If the MEMORY indicator lights continuously before the speed variation end point

This indicates that the memory became full at that point. It is therefore not possible to record more speed variation. The maximum capacity is a duration of 120 seconds.

To amend the stored speed variation

Press the PREVIEW button.
The interval between the speed variation start and end points is automatically played back at the stored speed. Operate the search dial as required, to adjust the playback speed.

Setting the initial speed to normal speed

In step **4**, press the PLAY button.

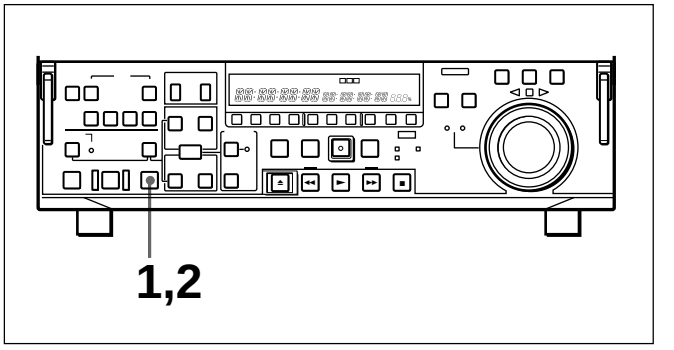
Executing DMC Playback

There are two methods of starting DMC playback.

- Starting playback at the on-air cue from the on-air start point
- Starting playback immediately after preroll

Notes

- To avoid operating mistakes we recommend that you use the VTR in standalone mode when carrying out DMC playback.
- When using two VTRs connected for editing, you can only use the recorder VTR for DMC playback, and only when both the RECORDER and PLAYER buttons are off.



To start playback at the on-air cue from the on-air start point

Use the following procedure.

1 Press the REVIEW button.

The REVIEW button lights, and the tape is cued up to the on-air start point. After the tape is cued up, the REVIEW button flashes.

2 At the moment the on-air cue is given, press the REVIEW button once more.

The REVIEW button lights, and playback starts at standard speed.
Between the speed variation start and end points, DMC playback is carried out at the stored speed, and then playback continues at normal speed and the tape stops at the on-air end point.

Starting playback immediately after preroll

Press the PREVIEW button.
The PREVIEW button lights, and after preroll, DMC playback is carried out for the section from the speed variation start point, then playback continues at normal speed from the speed variation end point.

Stopping the tape during DMC playback

Press the STOP button.

To exit DMC playback mode

Press the DMC EDIT/FEED button and the DELETE button simultaneously.

5-1 Automatic Editing

This section describes how to carry out automatic editing with this unit and another VTR connected to the REMOTE1-IN(9P) connector.

5-1-1 Overview

Editing mode

- **Assemble editing**
  This is the editing mode in which successive portions of the edited result are recorded on the end of the already completed section.
  The CTL signal, video signal, audio signal, and timecode are all newly recorded on the tape.
- **Insert editing**
  In this mode, new material is recorded at an intermediate point of an existing recording.
  The CTL signal is not recorded. The video signal, audio signal, and timecode signal can all be independently recorded.

You can carry out DMC editing in both editing modes. In insert editing, split editing is also possible.

Using CTL to interpolate timecode values

When you are using timecode values as edit point addresses, the timecode must be recorded on the tape in correct time sequence (i.e. the sections must be in strictly ascending time order).
If the timecode values are all in correct time sequence, then if there are any discontinuities in the timecode, the unit allows them to be interpolated using the CTL counter.

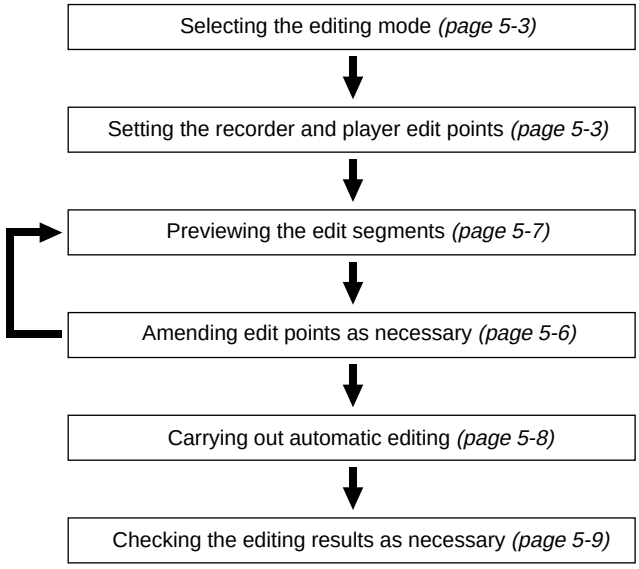
Recording timecode

For automatic editing, regardless of the settings of the INT/EXT switch and PRESET/REGEN switch, timecode is recorded continuously from the previous timecode recorded on the tape.

Using extended menu item 610, it is also possible to record time code according to the settings in the time code setting section on the lower control panel.

Sequence of editing operations

The following flowchart outlines the sequence of operations in automatic editing with two VTRs.


Selecting the editing mode (page 5-3)
Setting the recorder and player edit points (page 5-3)
Previewing the edit segments (page 5-7)
Amending edit points as necessary (page 5-6)
Carrying out automatic editing (page 5-8)
Checking the editing results as necessary (page 5-9)

Using an editing control unit

When controlling this unit with an editing control unit, set an edit delay on the editing control unit so that cut in and cut out instructions are output 5 frames before the actual edit point.

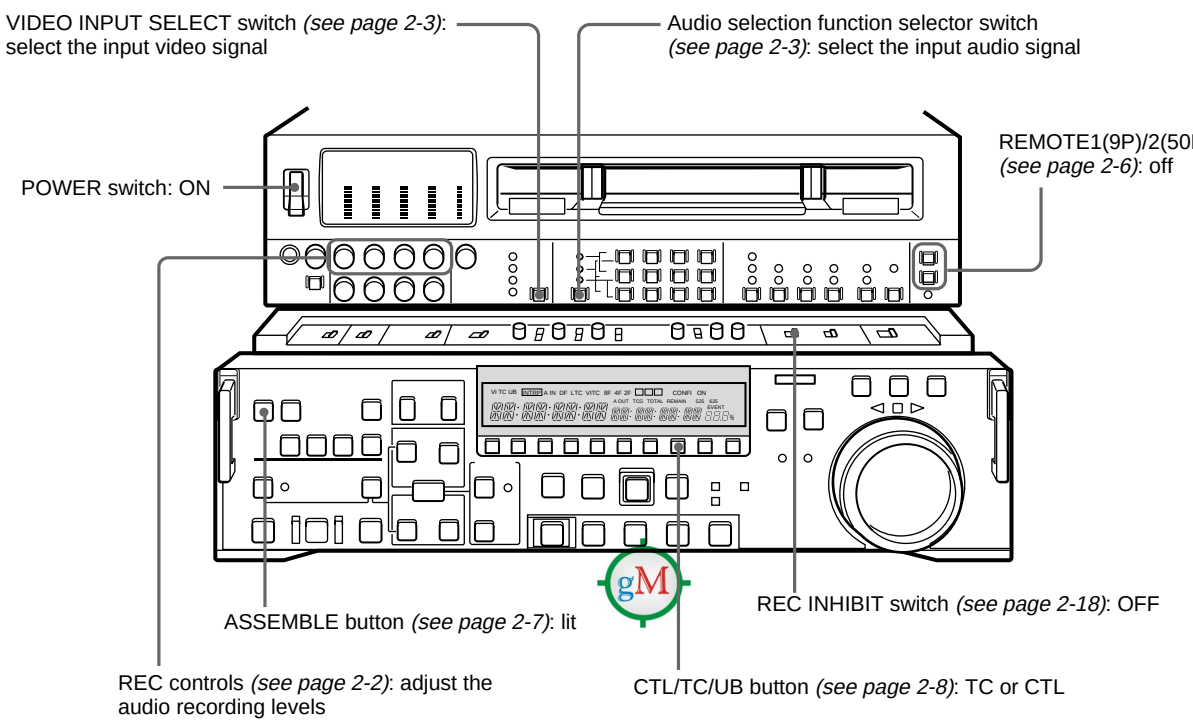
Notes on video output to the monitor

In E-E mode, the video output of the unit is delayed by the time for video circuit processing with respect to the input video signal (6H).
Unlike the playback operations described in Chapter 4, for playback to be carried out in editing mode with both the player and recorder specified, you can use extended menu item 701 to delay the V-SYNC phase, delaying it by 6H.

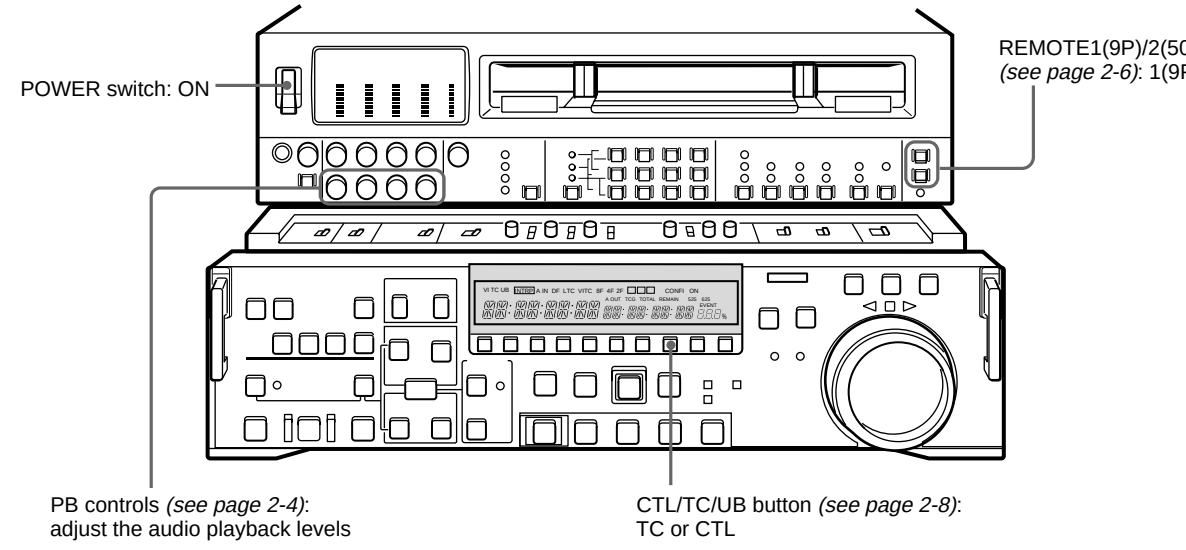
5-1-2 Switch Settings

Before beginning editing, set the switches as follows.

Recorder settings


VIDEO INPUT SELECT switch *(see page 2-3)*: select the input video signal
Audio selection function selector switch *(see page 2-3)*: select the input audio signal
REMOTE1(9P)/2(50P) buttons *(see page 2-6)*: off
POWER switch: ON
ASSEMBLE button *(see page 2-7)*: lit
REC INHIBIT switch *(see page 2-18)*: OFF
REC controls *(see page 2-2)*: adjust the audio recording levels
CTL/TC/UB button *(see page 2-8)*: TC or CTL

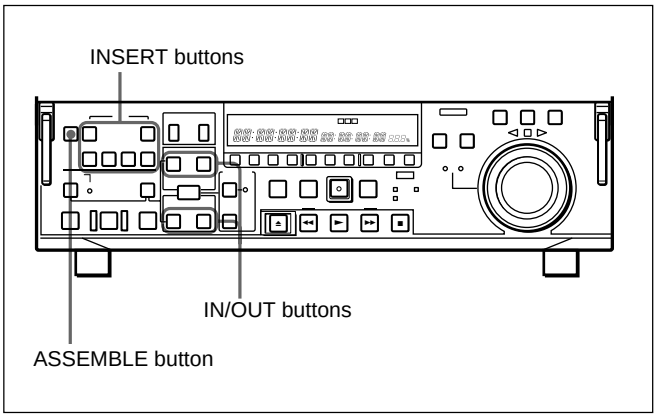
Player settings


REMOTE1(9P)/2(50P) buttons *(see page 2-6)*: 1(9P) button lit
POWER switch: ON
PB controls *(see page 2-4)*: adjust the audio playback levels
CTL/TC/UB button *(see page 2-8)*: TC or CTL

5-1-3 Selecting the Editing Mode

To select the editing mode

Select assemble editing or insert editing.



Depending on the editing mode, press the following button or buttons.

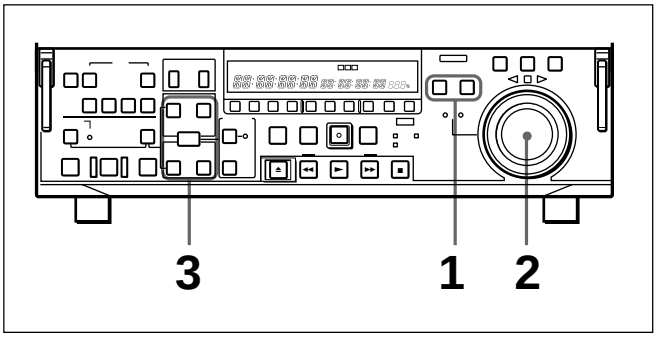
- For assemble editing: ASSEMBLE button
- For insert editing: the desired INSERT buttons (VIDEO, CH-1 to CH-4, TIME CODE)

When you select the editing mode, the IN/OUT buttons begin to flash, indicating that the edit points require setting.

5-1-4 Setting Edit Points

Set the edit points (IN and OUT points). To use split editing in insert mode, you can set the audio and video edit points separately.

To set an edit point



1 Press the RECORDER button or PLAYER button to select the VTR on which you will set the edit point.

The button which you have pressed lights.

2 Turn the search dial in jog or shuttle mode, and position the tape at the required edit point.

For details of playback in jog or shuttle mode, see the sections "Playback in jog mode" (page 4-8) and "Playback in shuttle mode" (page 4-9).

3 At the point at which you wish to set the IN point or OUT point, hold down the ENTRY button and press the IN button or OUT button as the case may be.

When the IN point or OUT point is set, the IN button or OUT button respectively lights.

4 Repeat steps **1** to **3** until all the necessary edit points are set.

When the IN points on both the recorder and player are set, the PREVIEW button and AUTO EDIT button flash, and it becomes possible to carry out a preview or editing operation.

Automatic setting of edit points

Editing requires four edit points: the IN and OUT points on both the recorder and player. However, once any three of these points are defined, the last point is set automatically. For example, if you set the recorder IN and OUT points, and the player IN point, the player OUT point is set automatically.

Note

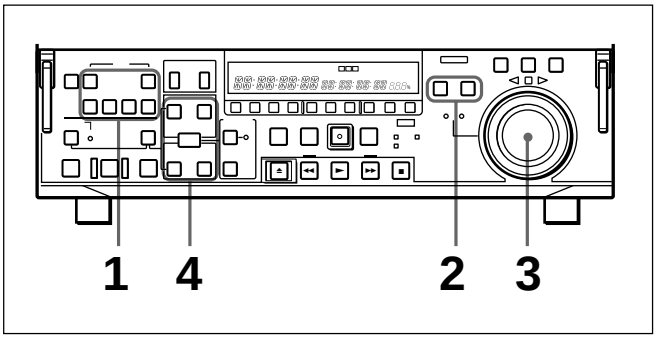
In the following cases, the DELETE button begins to flash and you cannot carry out automatic editing.

- The OUT point is before the IN point.
- All four of the recorder IN and OUT points and the player IN and OUT points have been set.
  Use the DELETE button to delete a redundant edit point, or set the edit points correctly.

For details of deleting edit points, see the section "Deleting an edit point" (page 5-6).

Setting split edit points

In split editing, you can set the edit points for audio and video independently. Set the audio edit points with the AUDIO IN/OUT buttons, and the video edit points with the IN/OUT buttons.
Note that split editing is only possible when the recording mode is insert editing.



1 Press the appropriate INSERT button (VIDEO, CH-1 to CH-4, or TIME CODE).

The IN/OUT, AUDIO IN, and AUDIO OUT buttons flash.

2 Press the RECORDER or PLAYER button to select the VTR for which edit points are to be set.

The button you have pressed lights.

3 To find the edit point, rotate the search dial in jog or shuttle mode.

For details of jog/shuttle mode playback, see the sections "Playback in jog mode" (page 4-8) and "Playback in shuttle mode" (page 4-9).

4 Press the ENTRY button together with one of the IN, OUT, AUDIO IN, and AUDIO OUT buttons, to set the edit point.

Once an edit point is set, the corresponding button changes from flashing to continuously lit.

5 Repeat steps **2** through **4** to set the required edit points.

As each edit point is set, the corresponding button changes from flashing to continuously lit.

Note

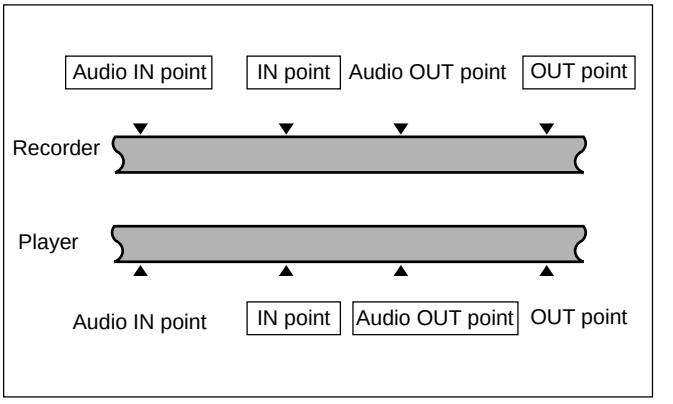
During split editing, if you set six or more edit points for the recorder and player, the DELETE button starts to flash, to indicate that such a setup is impossible. Delete all unnecessary edit points, using the DELETE button.

For details of deleting edit points, see the section "Deleting an edit point" (page 5-6).

Automatic setting of edit points in split editing

Split editing requires a total of eight edit points: four video edit points (player IN and OUT and recorder IN and OUT) and four audio edit points (player audio IN and OUT and recorder audio IN and OUT). However, as soon as you set five points, the system automatically calculates and sets the remaining three points. Specifically, once you have set three of the four video edit points and two audio edit points, the remaining three edit points are set automatically, regardless of whether these points are for the recorder or player.

In the figure below, the edit points shown within boxes are already set. The other edit points (recorder audio OUT point, and player audio IN and video OUT points) are set automatically.
Note that, regardless of whether it was set manually or automatically, any edit point can be deleted or corrected later.



You can set audio cut in, crossfade, fade in, and fade out effects, including their durations, by menu selection. For details, refer to "7-3 Extended Menu".

When the audio IN point is not set for insert editing of audio only

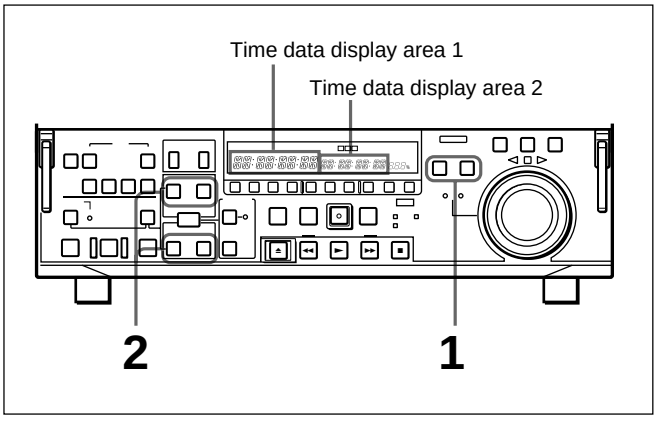
As long as the audio OUT point is set, the VTR is ready for preview or editing. If the audio IN point has not been set, the current tape position is automatically used as the audio IN point.

Using a VTR without a split editing function as the player

If it is not possible to set separate audio and video edit points on the VTR you are using as the player, by setting the audio IN and OUT points on the recorder (this unit), then setting three video edit points, split editing is possible.

To display the time value for an edit point

You can display the time value for an edit point in the control panel display section *(see page 2-9)*.
The IN point appears in time data display area 1, and the OUT point in time data display area 2.



1 Press the RECORDER button or PLAYER button to select the VTR on which you wish to check the edit point.

The button you have pressed lights.

2 Hold down the IN button or OUT button according to the edit point you wish to check.

While you hold down the button, the IN indicator or OUT indicator of time data display area 1 or 2 lights, and the time value of the edit point is displayed.

To display the duration of an edit

You can display the duration between two edit points in the following three cases, in the control panel display section *(see page 2-9)*.

- When both the IN point and OUT point are set: the duration of the segment between the two points
- When only one of the IN point and OUT point is set: the duration of the segment between the point which is set and the current tape position
- When neither of the IN point and OUT point is set: the duration of the previous editing segment

The duration is displayed across time data display areas 1 and 2, thus: “DURATION 00:01:10:00”.
To display a duration, use the following procedure.

1 Press the RECORDER button or PLAYER button to select the VTR on which you wish to check the duration.

The button you have pressed lights.

2 Hold down both the IN button and OUT button.

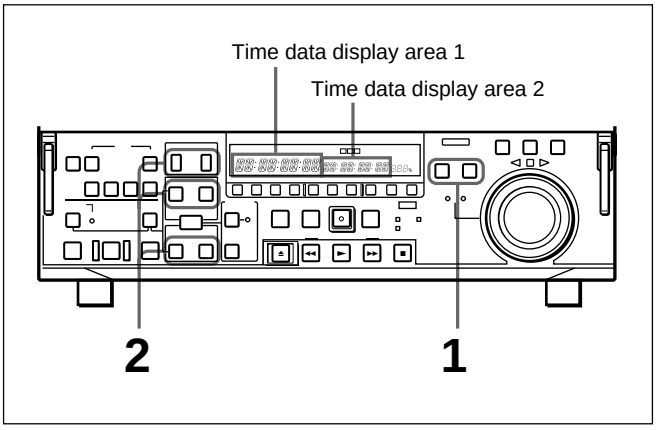
While you hold down the buttons, the duration is displayed across time data display areas 1 and 2.

5-1-5 Modifying and Deleting Edit Points

If the edit points are not set correctly, for example if an OUT point is before a corresponding IN point, the DELETE button flashes, and it is not possible to carry out a preview or editing operation. In this case, either modify the erroneous edit point, or first delete it and then enter it correctly.

Modifying an edit point

To modify an edit point, use the following procedure.



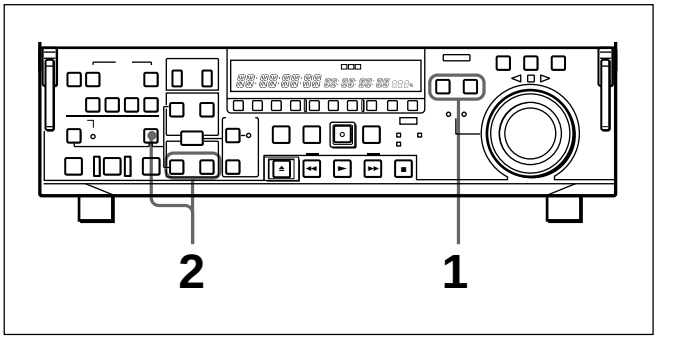
1 Press the RECORDER button or PLAYER button to select the VTR on which you wish to modify the edit point.

The button you have pressed lights.

2 Hold down the IN, OUT, AUDIO IN, or AUDIO OUT button corresponding to the edit point you wish to modify, and press the TRIM buttons (+ or –).
While you hold down the button, the time value for the edit point appears in the display; pressing the + button increases the value by one frame, and pressing the – button decreases it by one frame.

Deleting an edit point

To delete an edit point, use the following procedure. You can use the same procedure whether or not the DELETE button is flashing.



1 Press the RECORDER button or PLAYER button to select the VTR on which you wish to delete the edit point.

The button you have pressed lights.

2 Hold down the DELETE button and press the IN button or OUT button according to the edit point you wish to delete.

The IN point or OUT point is deleted according to which button you pressed, and the DELETE button goes off.

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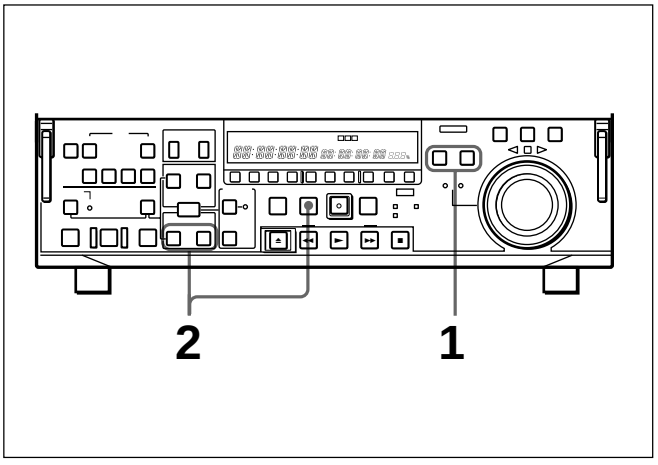
5-1-6 Cue-up to Edit Points and Preroll

To preroll to an edit IN point or cue up to any edit point, use the following procedure.



1 Press the RECORDER button or PLAYER button to select the VTR on which you wish to operate.

The button you have pressed lights.

2 • **To cue up to an edit point**
Hold down the IN button or OUT button according to the edit point to which you wish to cue up, and press the PREROLL button.

This cues up to the edit point you have selected.

• **To preroll**
Press the PREROLL button.

The tape is wound back to a position 5 seconds before the edit IN point, and stops.

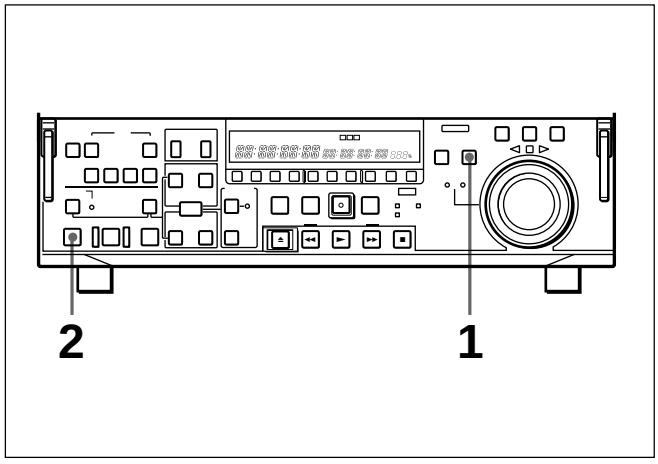
To change the preroll time

The factory default setting for the preroll time is 5 seconds, but you can use basic menu item 001 to change this to any value from 0 to 30 seconds. If you change the preroll time, make sure that the setting is not longer than the recording length before the edit IN point.
Note that for automatic editing, the preroll time setting on the recorder takes precedence.

For details of the basic menu, see Section 7-2-1, "Items in the Basic Menu" (page 7-1).

5-1-7 Preview

When you have set the edit points, the PREVIEW button flashes, indicating that you can carry out a preview.
To carry out a preview, use the following procedure.



1 Press the RECORDER button, turning it on.

2 Press the PREVIEW button.

The PREVIEW button changes from flashing to continuously lit, and the preview is carried out. At the end of the preview, the PREVIEW button flashes again.

To stop the preview
Press the STOP button.
The tape stops at the position where you pressed the button.

To return the tape to the preroll point

Press the PREROLL button.

To return the tape to the IN point or OUT point

Press the PREROLL button and the IN button or OUT button simultaneously.

After the preview, make any necessary adjustments to the edit points, then repeat the preview.

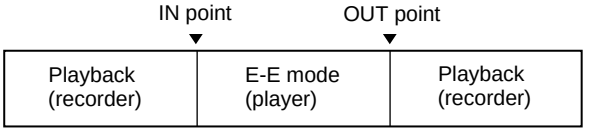
For details of how to modify or delete edit points, see Section 5-1-5, "Modifying and Deleting Edit Points" (page 5-6).

Monitor output

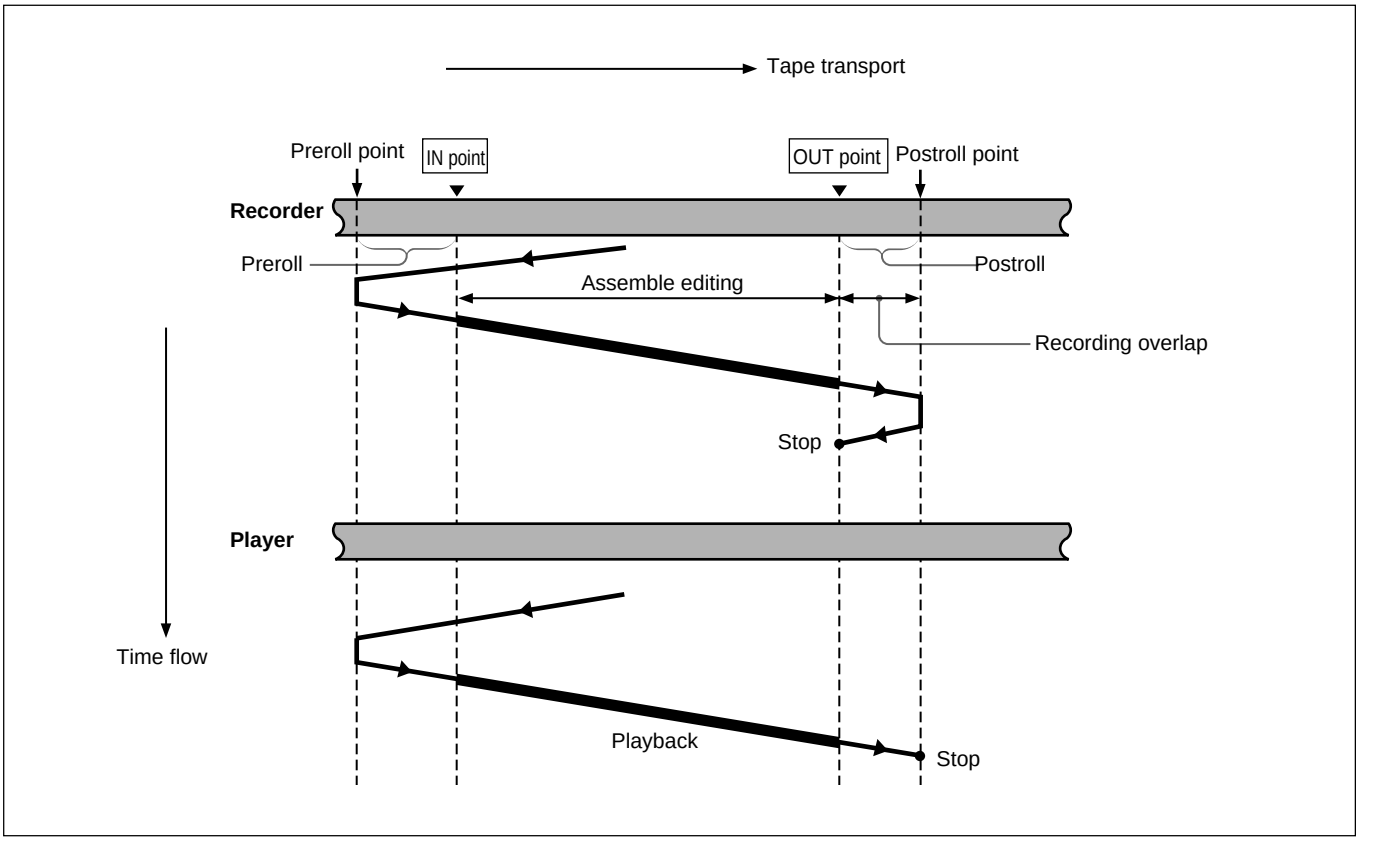
During a preview, on a monitor connected to the recorder you can monitor the following video and audio.

- From the preroll point to the IN point, you can monitor the playback from the recorder.
- From the IN point to the OUT point, you can monitor the playback from the player through the recorder in E-E mode.
- From the OUT point to the postroll point, you can monitor the playback from the recorder.

The following figure illustrates this.



5-1-8 Carrying Out Automatic Editing



Overview

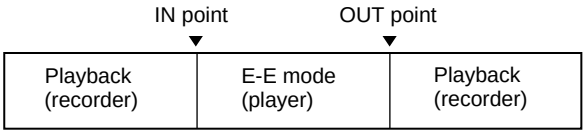
When you carry out automatic editing, the recorder and player operate as shown in the figure above, to copy the video and audio signals between the IN and OUT points on the player to the segment between the IN and OUT points on the recorder.

Monitor output

During execution of an automatic edit, as during a preview, on a monitor connected to the recorder you can monitor the following video and audio.

- From the preroll point to the IN point, you can monitor the playback from the recorder.
- From the IN point to the OUT point, you can monitor the playback from the player through the recorder in E-E mode.
- From the OUT point to the postroll point, you can monitor the playback from the recorder.

The following figure illustrates this.



In CONFI mode, you can monitor the video and audio signals actually recorded. You can use CONFI head playback for the whole edit operation from the preroll point to the postroll point, including the section between the IN and OUT points.

Using a single monitor for video and audio on both player and recorder

For efficient editing if only one monitor is available, use the following method.

1 Connect the monitor to the recorder.

2 In the setup menus, set item 008 to "**AUTO**".

3 Press the PLAYER button on the recorder.

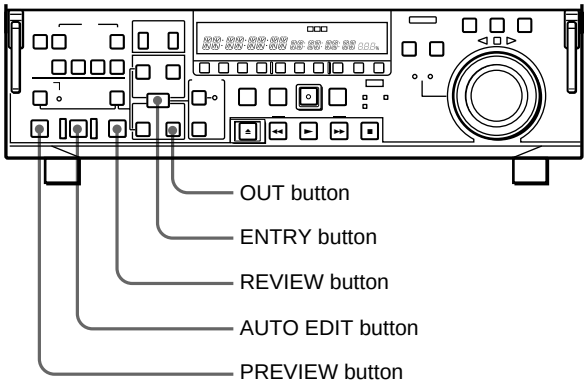
This forces the recorder to E-E mode, in which the player video and audio signals are output to the monitor.

Note

In insert editing, a CTL signal must be recorded on the recorder tape. It is not possible to carry out editing on a section of the tape with no CTL signal.

Starting automatic editing

When you have set the edit points, press the flashing AUTO EDIT button.
The AUTO EDIT button changes from flashing to continuously lit, and the automatic editing operation begins.
At the end of the editing operation, the AUTO EDIT button goes off.



To change the OUT point after starting automatic editing operation

After starting the automatic editing operation, to end the operation before the preset OUT point, hold down the ENTRY button and press the OUT button.
The position where you pressed the button becomes the OUT point, and editing ends.

To abandon automatic editing

Press the STOP button.
The automatic editing operation is abandoned. At the same time, the PREVIEW button and AUTO EDIT button start flashing, and the state before the editing was started is restored.
In this case, the IN and OUT points already set are preserved so that you can carry out a preview or automatic editing operation again by pressing the PREVIEW button or AUTO EDIT button.

Reviewing the editing results

After carrying out an editing operation, you can carry out a review, to check the editing results on the monitor.
To carry out a review, after carrying out the edit, and before you set any new edit points or make other settings, press the REVIEW button.
The REVIEW button lights, and the review is carried out.
At the end of the review the REVIEW button goes off, and the tape returns to the OUT point.

After automatic editing, to adjust the edit points and reexecute the edit

Hold down the DELETE button and press the ENTRY button to recall the edit points. After adjusting the edit points, press the AUTO EDIT button to carry out the edit again.

For details of how to adjust edit points, see Section 5-1-5, "Modifying and Deleting Edit Points" (page 5-6).

5-2 DMC Editing

When the player is a playing back in Betacam SX format, by controlling the player playback speed from the recorder you can achieve variable speed editing.

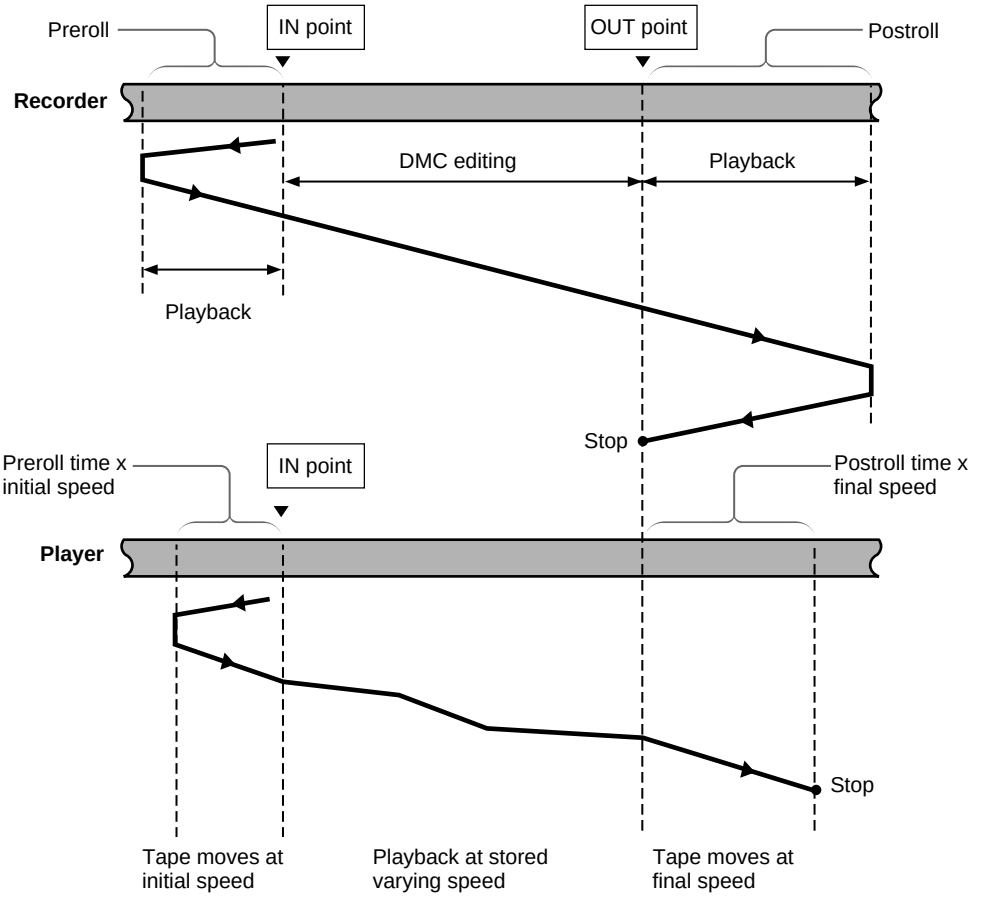
5-2-1 Overview of DMC Editing

Conditions for DMC editing

DMC editing can be used for insert or assemble editing, but audio split editing cannot be used.

Tape movement during DMC editing

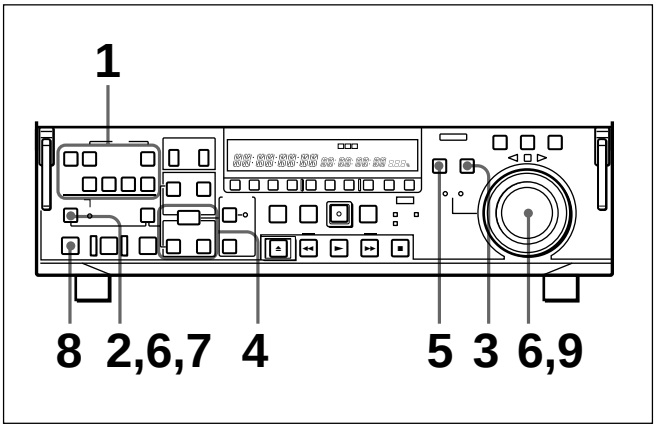
The following figure illustrates how the tapes move on both the player and recorder during DMC editing.



5-2-2 Carrying Out DMC Editing

Setting the edit points and player speed

Use the following procedure.



1 Press the ASSEMBLE button or INSERT button to select the editing mode.

2 Press the DMC EDIT/FEED button.

This unit switches to the DMC editing mode, and the DMC EDIT/FEED button lights.

3 Press the RECORDER button.

4 Holding down the ENTRY button, press the IN or OUT button to set an edit point.

5 Press the PLAYER button, to set the player IN point.

Note

It is not possible to set the player OUT point.

6 Holding down the DMC EDIT/FEED button, turn the search dial, to set the initial speed.
To select normal speed as the initial speed, press the PLAY button.

The speed you set appears in the time data display area 2.

7 When the initial speed setting is complete, release the DMC EDIT/FEED button.

8 Press the PREVIEW button.

The tape is prerolled and then the recorder starts operating at normal speed and the player at the set initial speed.

9 On passing the IN point, the MEMORY indicator begins to flash: turn the search dial to vary the playback speed.

While the MEMORY indicator is flashing, the speed variations are stored in memory. On passing the OUT point, the MEMORY indicator changes from flashing to continuously lit, and the variable speed storing ends.

If the MEMORY indicator lights continuously before the speed variation end point

This indicates that the memory became full at that point. Thus even before the OUT point is reached, it is not possible to record more speed variation.
The maximum capacity is a duration of 120 seconds.

Quitting the DMC edit mode

Press the DELETE button and DMC EDIT/FEED button simultaneously.

Executing the DMC edit

Press the AUTO EDIT button.
DMC editing is carried out at the stored varying speed. Once the editing is carried out, the stored speed variation is lost from memory.

To check the editing results

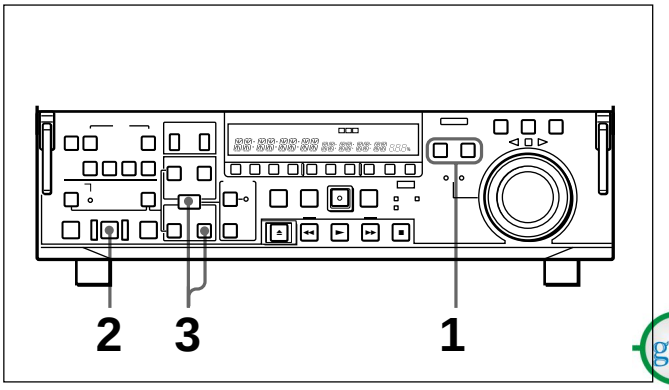
Press the REVIEW button.

5-3 Special Editing Methods

This section describes the following editing methods:
- Quick editing
- Continuous editing
- Standalone editing
- Manual editing
- Preread editing

5-3-1 Quick Editing

After selecting the edit mode, you can save on editing time by setting the edit points and executing the edit at the same time.
For quick editing, use the following procedure.



1 When operating the player, press the PLAYER button, turning it on, and when operating the recorder, press the RECORDER button, turning it on, then stop the tapes on both the player and the recorder at the positions you wish to make the respective IN points.

2 Press the AUTO EDIT button.

Editing starts.

3 Watching the editing on the monitor, at the position you wish to make the OUT point, hold down the ENTRY button and press the OUT button.

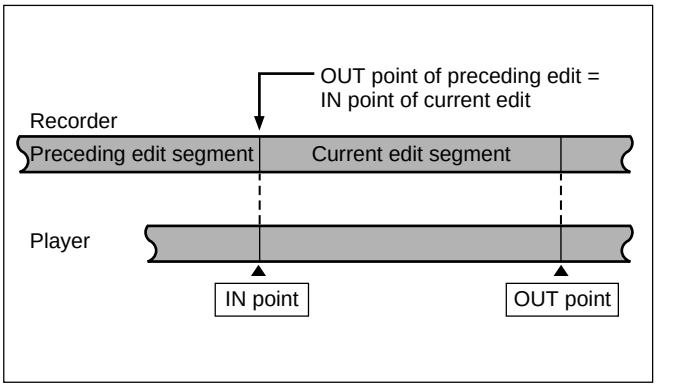
Editing ends.
The point at which you started the editing becomes the IN point, and the point at which you ended the editing becomes the OUT point.

If you want to preview

In step **1**, after setting the recorder or player IN point, press the PREVIEW button.

5-3-2 Continuous Editing

After an automatic editing operation, the recorder automatically returns to the OUT point. For the second and subsequent editing operations, you can continue editing by simply specifying the IN and OUT points on the player. In this case the current OUT point on the recorder becomes the new IN point.



After automatic editing of one edit segment, to carry out continuous editing use the following procedure.

1 Set the player IN and OUT points.

On the recorder the OUT point for the previous edit becomes the new IN point.

2 Press the PREVIEW button to carry out a preview.

3 Press the AUTO EDIT button.

This executes the edit.
When the editing operation is completed, the recorder stops at the OUT point, and the player stops 2 seconds after the OUT point.

By repeating this process, you can carry out continuous editing.

By setting extended menu item 326, you can make the preceding OUT point automatically become the new IN point.

5-3-3 Standalone Editing

This refers to editing using as the player an external device which cannot be controlled remotely through the REMOTE1-IN(9P) connector. For example, you can record a color bar signal from a signal generator in the joints between the scenes of an already completed tape.

Carrying out standalone editing

First use the VIDEO INPUT SELECT switch to select the signal being generated by the signal generator connected to the unit, then with both the PLAYER button and RECORDER button off, set the IN point. The AUTO EDIT button flashes, and it is now possible to carry out automatic editing.
If necessary, you can also first set the OUT point.

5-3-4 Manual Editing

Use the following procedure to carry out manual editing.

1 Press the RECORDER button, turning the indicator on.

2 Use the search dial in jog or shuttle mode to find the editing start point (the recorder IN point), and stop the tape just before this point.

Note

If the recorder is in stop mode, then when editing starts this section of the video will break up.

3 Select the editing mode.

4 Press the PLAY button.

The recorder begins playback.

Note

It takes about two seconds until the playback video stabilizes. For this reason, start the playback from before the segment of video you wish to use.

5 At the editing start point (the recorder IN point), press the EDIT button and PLAY button simultaneously.

Editing starts.

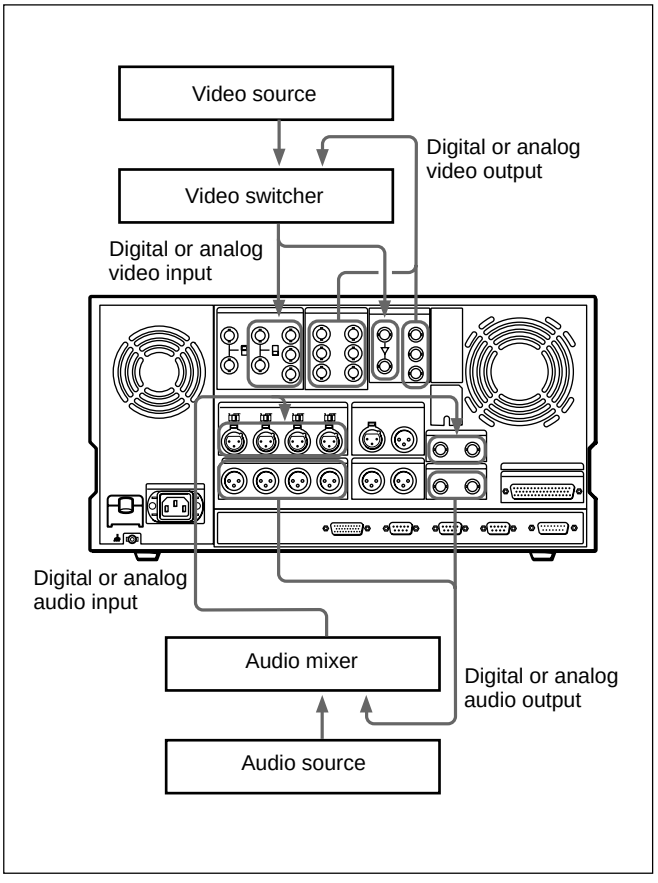
6 At the editing end point (the recorder OUT point), press the PLAY button.

Editing ends, and the recorder continues with playback.

7 Press the STOP button to stop the recorder playback.

5-3-5 Preread Editing

Video and digital audio signals already recorded on the tape can be used as an edit source for insert editing. This type of editing is called “preread editing”, as the VTR uses the preread heads to read the signals in advance from the tape.
The signals read out can be send to a mixer for mixing, and can be recorded either on the original channels or on other digital audio channels.
For preread editing, press the PREREAD button, turning the indicator on.



Notes

- In preread editing, if an input video signal is used as the reference signal for the output video signal, this forms a feedback loop. To prevent the occurrence of feedback, set the OUT REF switch on the subsidiary control panel to REF, and set item 309 in the setup menus to “1” so as to use an external reference signal.
- When the preread mode is selected, to prevent feedback due to the loop connection, whatever the operating mode of this unit, no E-E video output is available.
  When preread mode is turned off after preread editing, however, if the loop connection remains and an E-E signal is output, feedback will occur.
  To prevent this, select PB mode for the video and digital audio channels in all the modes before the preread editing, as follows.

1 Press the PB button, turning it on.

2 Press the PREREAD button, turning the indicator on.

3 Make the necessary connections for the preread editing.

4 After selecting the desired insert editing mode, carry out the preread editing.

5 When the preread editing is completed, remove the connections.

6 Press the PREREAD button, turning the indicator off.

7 Check that no loop connection remains.

6-1 Overview

This unit can record shot marks or use shot marks recorded with this unit, DNW-A75 or Betacam SX camcorders. Shot marks are indications at desired points on a tape which enable faster cueing.

Types of shot mark

This unit supports the following three types of shot mark. This chapter describes recording start marks and post marks, treating them as varieties of shot marks.

Shot mark type	Writing on a camcorder etc.	Writing on this unit	Modifying and deleting on this unit
Recording start mark	Automatically written at the start of recording.	Written or not according to a separate menu setting for each recording mode (crash recording, assemble editing, insert editing). For each mode for which the setting is “ON”, the mark is written automatically at the start of recording.	Possible.
Shot mark 1 and shot mark 2	Written by a manual shot mark operation during recording or editing.	Written by a button operation during crash recording or assemble editing. A menu setting determines which of three types of mark is written: shot mark 1, shot mark 2, or post mark.	
Post mark	Not written (Written only by this unit)	Written by a button operation during playback, while stopped, during a search, or during recording (crash recording or assemble editing).	

First, the shot mark functions of this unit are described in simple terms.

Reading shot marks

This unit reads in shot marks written on a Betacam SX camcorder or similar equipment and stores them in memory. (To a maximum of 200)
Once this data is stored in this unit, it is preserved even when the power is turned off.

Writing and erasing shot marks

For recording start marks, a menu setting determines whether or not they are written each time recording starts. Shot mark 1, shot mark 2, and post mark types can be written at any point on a tape, and also erased or rewritten.

Shot mark list operations

On the monitor, you can display a list of the shot marks read in by this unit, select required shot marks, delete shot marks, and so on. You can also add a memo mark (#) to a shot mark in the list.
During tape playback, you can add a list of virtual shot marks. This is not written on the tape itself.

Cueing up to shot marks

By selecting a desired shot mark from the shot mark list, you can cue up immediately to that position. By means of a button operation, you can also cue up to the shot marks adjacent to the current tape position. (Index function)

Shot data display

When the tape includes shot data (camera, time, and other information captured at the time of shooting), you can read this in, and display the details on a monitor. It is also possible to display the shot mark list and shot data simultaneously.

Sorting shot marks by cassette

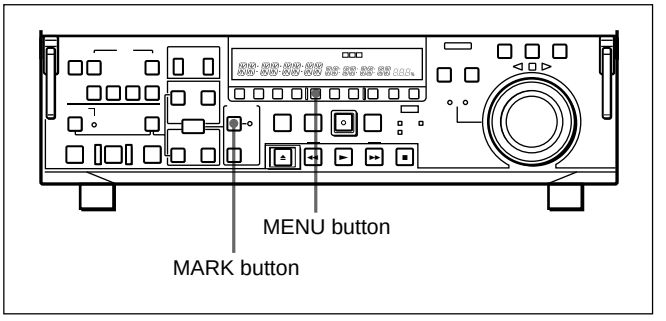
When the tape includes shot data, this unit recognizes which cassette each shot mark comes from. You can therefore sort the read-in shot marks by cassette, to obtain a list in timecode order.

6-2 Shot Mark Operation Menu

This section describes the settings in the shot mark operation menu.

Displaying the shot mark operation menu

Hold down the MARK button, and press the MENU button.



The following menu appears on the monitor.

```
SHOT MARKER
 G01:SEARCH TYPE -   all
 G02:LISTING TYPE
 G03:RS.MARK MODE
 G04:MARK IN REC   shot1
```

Details of the shot mark operation menu

The shot mark operation menu comprises four items, G01 to G04. The detailed contents appear in the following table.

Item number	Item name	Settings
G01	SEARCH TYPE	Select which shot mark types the index function searches for, from the following possibilities: **all** **rec start mark** **shot mark 1** **shot mark 2** **post mark**
G02	LISTING TYPE	For each type of shot mark, select whether to read into the list (ON) or not read (OFF): **rec start mark** **shot mark 1** **shot mark 2** **post mark**
G03	RS.MARK MODE	For each type of recording, select whether to write recording start marks (ON) or not write them (OFF): **crash REC:** crash recording **assemble:** assemble editing **insert:** insert editing
G04	MARK IN REC	Select the type of shot mark to write during recording and assemble editing. **shot mark 1** **shot mark 2** **post mark**

Changing the menu settings

The basic procedure for accessing menu items and changing settings is the same as for the setup menus. Note, however, the following operations for items G02 and G03.

For details of setup menu operations, see Section 7-2-2, "Basic Menu Operations" (page 7-4).

To change the settings of items G02 and G03

Use the following procedure.

1 Press the STOP button to select the required item.

2 Hold down the JOG button and turn the search dial to toggle the value to ON or OFF.

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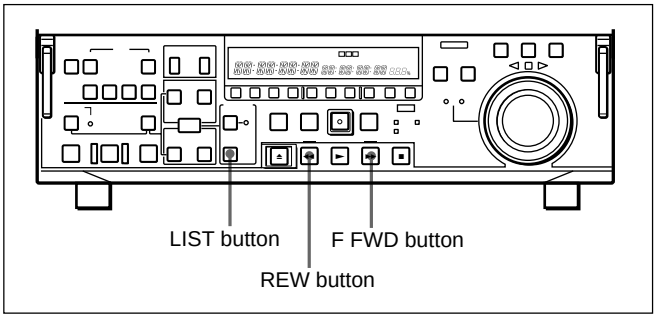
6-3 Shot Mark Operations

This section describes the operations concerning reading and writing shot marks. Note that the following operations cannot be carried out by remote control.

6-3-1 Reading Shot Marks

To read in shot marks

With a cassette loaded, hold down the LIST button and press the F FWD or REW button.



While the shot marks are being read in, the F FWD or REW button flashes.
The unit searches to the end of the tape, then rewinds automatically.

For the procedure for list the shot marks read in, see page 6-4.

Note

It is only possible to read in a maximum of 200 shot marks.
When 200 shot marks have been read in, the control panel display shows the message “SHOT LIST FULL”, and the reading stops.
To cancel the message, press one of the tape transport buttons.

To stop reading

Press the STOP button.

Reading shot marks from more than one cassette

After changing the cassettes, carry out the reading operation again.
Data written in the new cassette will be added as long as the total does not exceed 200 shot marks. For example, if 190 shot marks have already read in, only 10 shot marks will be read from the new tape.
In the shot mark list *(see page 6-4)* the data from different cassettes is separated by a row of dashes.

6-3-2 Writing Shot Marks

Writing recording start marks during recording

In item G03 of the shot mark operation menu *(page 6-2)*, for each of the three recording modes (crash recording, assemble editing, and insert editing), select whether or not to write recording start mark.
When you set a particular mode to “ON”, a recording start mark is written on the tape each time you start recording in that mode.

Note

For insert mode, press the TIME CODE button to turn the indicator on.

Writing shot mark 1, shot mark 2, or post marks

Selecting the type of shot mark written

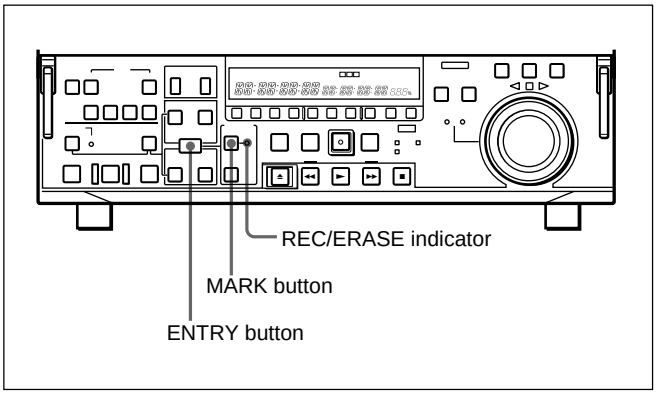
In item G04 of the shot mark operation menu *(page 6-2)*, select one of shot mark 1, shot mark 2, and post mark.

Note

If any of the settings (to write a recording start mark) in item G03 of the shot mark operation menu are set to “ON,” then for 20 frames from each recording, assemble editing, or insert editing start, the user bits are overwritten with the shot mark data.

To write in crash recording or assemble editing

At the position you wish to write the mark, hold down the ENTRY button, and press the MARK button.



While the mark is being written, the message “RECORD SHOT MARK” appears on the monitor.

Writing during playback, while stopped, or during a search

When this unit is in any of the playback, stopped, or search modes, you can write a post mark only.

1 Hold the MARK button down for at least 2 seconds.

The REC/ERASE indicator lights green.

2 At the position you wish to write the mark, hold down the ENTRY button and press the MARK button.

While the mark is being written, the message “RECORD SHOT MARK” appears on the monitor, and the REC/ERASE indicator lights red.

Erasing a shot mark

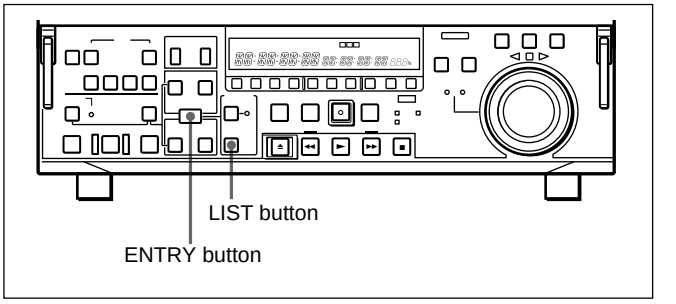
Select the shot mark from the shot mark list, and then carry out the deletion operation.

For details of the procedure, see page 6-6.

6-3-3 Shot Mark List Operations

Displaying the shot mark list

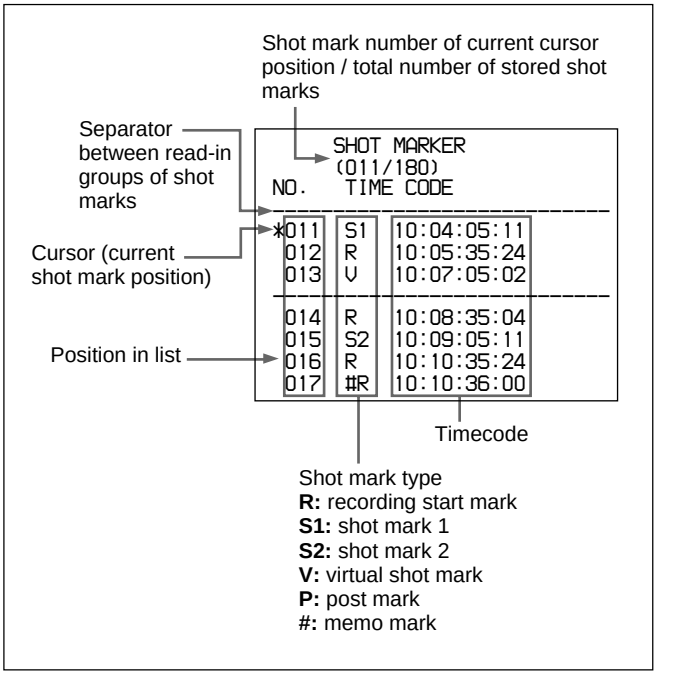
Hold down the ENTRY button and press the LIST button.



All of the shot mark types for which item G02 in the shot mark operation menu is set to “ON” appear in the list. If you do the same operation again, the list display disappears.

Example of list display

The following figure shows how the list is organized.

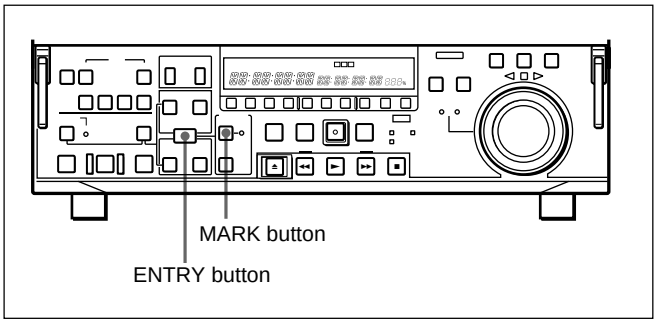


Selecting a shot mark

Turn the search dial to align the asterisk cursor with the desired shot mark.

Entering virtual shot marks

During playback or search, hold down the ENTRY button, and press the MARK button.



A virtual shot mark appears on the monitor as "V-MARK xxx" (xxx is the number). This is not written to the tape.
After entering a virtual shot mark, if you change the cassette or power the unit off, it appears in the list as the first shot mark of the next group read in.

Adding a memo mark (#)

Select the shot mark to which you wish to add the memo mark, then press the SET button.
Repeat this operation to remove a memo mark.

Selecting the types of shot mark to be shown in the list

For each of the types of shot mark (recording start mark, shot mark 1, shot mark 2, and post mark) you can specify whether it is read in.
In item G02 of the shot mark operation menu, set the required types to "ON".

For details of the menu, see page 6-2.

You can also use the following procedure.

1 With the shot mark list displayed, hold down the STOP button, and press the SET button.

You can now select the shot mark types.

2 Turn the search dial to select a shot mark type.

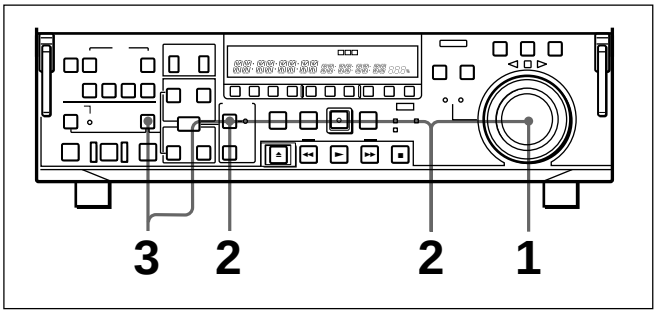
3 Hold down the JOG button and turn the search dial to switch between ON (displayed) and OFF (not displayed).

4 To return to the shot mark list, hold down the STOP button, and press the SET button.

Deleting a shot mark from the list

To delete an individual shot mark

Use the following procedure.



1 In the shot mark list, select the shot mark to be deleted.

2 Hold the MARK button down.

While you hold down the button, an "X" appears after the selected shot mark number, indicating that it will be deleted.
To delete more than one shot mark, while holding down the MARK button turn the search dial to select all of the shot marks.

3 With the MARK button held down, press the DELETE button.

This deletes the shot marks which were marked by an "X".

To delete the entire list

Hold down the DELETE button and press the LIST button.
This deletes all shot marks from the list. This does not erase marks from the tape.

Erasing shot marks from the tape

To erase a shot mark, use the following procedure.

Note

Once you erase a shot mark from the tape, it cannot be read back in.

1 With no shot mark list displayed, hold the MARK button down for at least 2 seconds.

The REC/ERASE indicator lights green, indicating that you can rewrite or erase shot marks.

2 Display the shot mark list.

3 Turn the search dial to select on the list the shot mark you wish to erase.

4 Press the DELETE button and MARK button simultaneously.

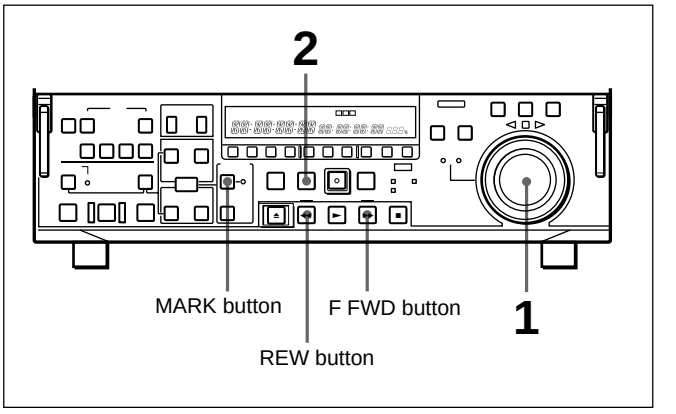
During the erasure process the message “ERASE SHOT MARK” appears, and the REC/ERASE indicator lights red.

5 When the erasing operation is completed, hold down the MARK button for at least 2 seconds, to turn off the REC/ERASE indicator.

6-3-4 Cueing Up to Shot Marks

Cueing up to a selected shot mark

Use the following procedure.



1 Select the desired shot mark from the shot mark list.

2 Press the PREROLL button.

Cueing up to shot marks adjacent to the current tape position (index function)

To select the shot marks to which the index function applies

In item G01 of the shot mark operation menu *(page 6-2)*, select one of recording start mark, shot mark 1, shot mark 2, and post mark, or select all.

To cue up to the shot mark before or after the current tape position

Holding down the MARK button, press the F FWD button or REW button.
While the tape is moving the F FWD button or REW button flashes.

Note

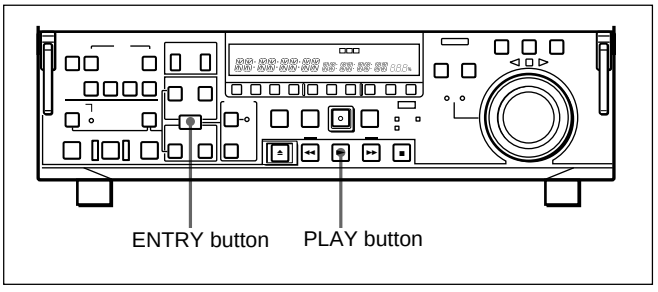
It is not possible to cue up to a virtual shot mark.

6-3-5 Reading in Shot Data

When there is shot data (time, device, and other information about the shooting) written on the tape, you can read it in and display it on the monitor.

Displaying the shot data

Holding down the ENTRY button, press the PLAY button.



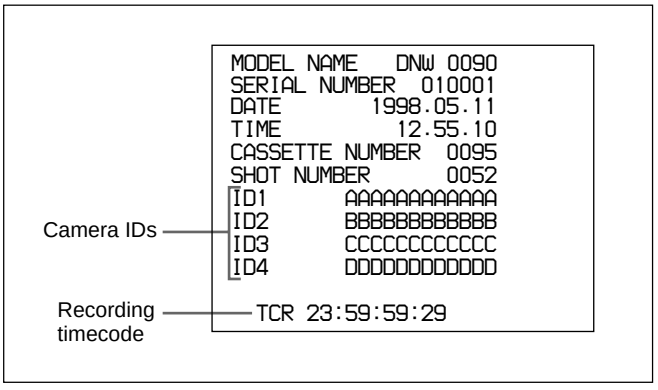
The tape is played back, and the shot data displayed.

To delete the shot data

Once again hold down the ENTRY button, and press the PLAY button.

Example of shot data display

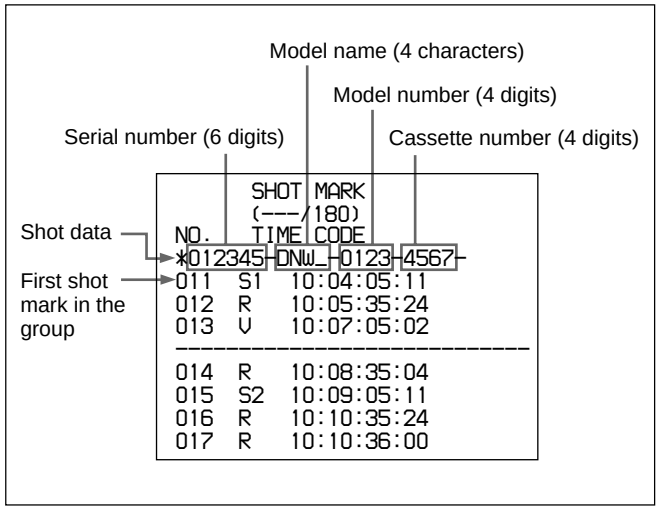
The shot data display appears as shown below.



The details in the shot data depend on the shooting conditions. If because of the devices used there is no shot data on a part of the tape, it appears as blank.

Displaying the shot data on the shot mark list

Turn the search dial to position the cursor on a separator in the shot mark list.
If there is shot data recorded when the immediately following shot mark was written, it appears in the display as shown below.



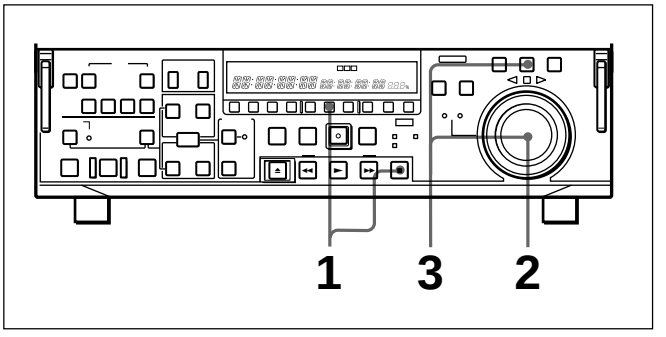
You can sort the shot marks in the list, based on the shot data. For details, see the next section.

6-3-6 Sorting Shot Marks

Based on shot data recorded on the tape, you can separate the shot marks by cassette, and sort them in timecode sequence.

To sort the shot marks

Use the following procedure.



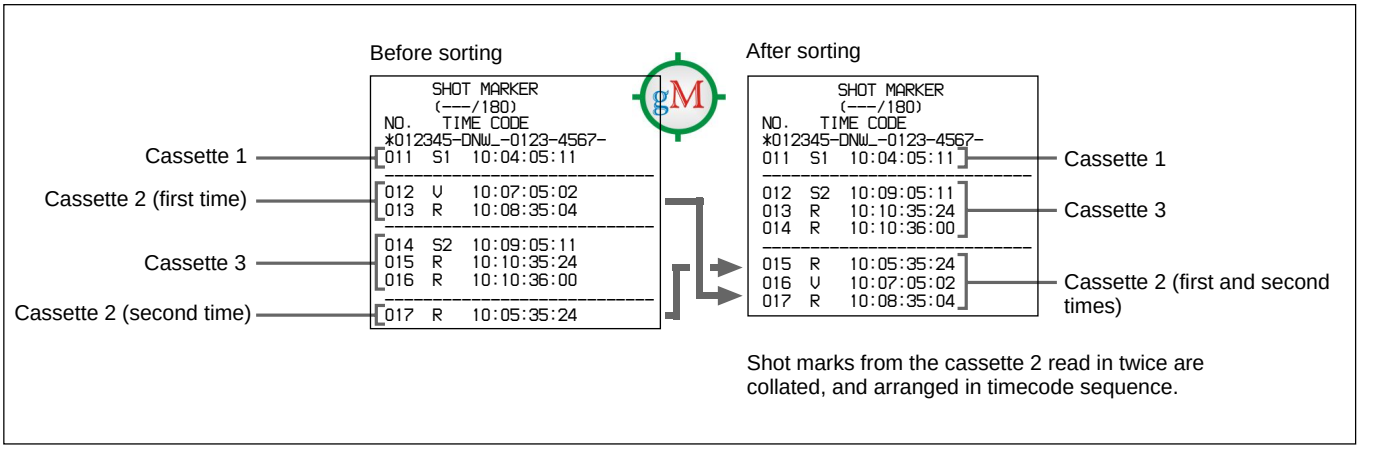
1 With the shot mark list displayed, hold down the STOP button and press the SET button.

2 Turn the search dial, and select “SORTING LIST”.

3 Hold down the JOG button and turn the search dial to change the setting to “ON”.

Sorting starts. When it ends, the setting indication returns to “OFF”.

For example, if shot marks have been read in twice from the same cassette, these can be collated as shown in the following figure.



7-1 Menu System Configuration

The menu system of this unit comprises the basic menu and extended menu.

• Basic menu
This menu is used to make settings relating, for example, to the following.
- the hours meter
- the preroll time
- the character information superimposed on the output to the monitor
- switching between the 525/60 (NTSC) system and 625/50 (PAL) system
- the menu banks for retaining menu settings

For detailed information about menu operation relating to the hours meter, see Section 8-5-1 "Digital Hours Meter" (page 8-4).

• Extended menu
This menu is used to make a wide range of settings relating to the functions of this unit, for example, the control panel functions, video and audio control, and digital data processing.

7-2 Basic Menu

7-2-1 Items in the Basic Menu

The basic menu contains the following items.

In the "Settings" column of the table, the factory default settings are indicated by an enclosing box.

Item number	Item name	Settings
001	PREROLL TIME	**0S ... [5S] ... 30S:** Set the preroll time to between 0 and 30 seconds. A preroll time of at least 5 seconds is recommended when using this unit for editing.
002[a)]	CHARACTER H-POSITION	Adjust the horizontal screen position of the character information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **00 ... [1C] ... 3C (525 mode)/00 .. [19] ... 36 (625 mode):**The hexadecimal value 00 is for the far left of the screen and increasing the value moves the position of the characters to the right.
003[a), b)]	CHARACTER V-POSITION	Adjust the vertical screen position of the first line of the characters information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **00 ... [57] ... 6A (525 mode)/00 .. [5D] ... 60 (625 mode):**The hexadecimal value 00 is for the top of the screen and increasing the value lowers the position of the characters.
004	SYNCHRONIZE	When editing using this unit as a controller and an external VTR connected to this unit via a 9-pin remote control cable, this item determines whether or not to operate the two units in phase synchronization. **[ON] :** Operate in phase synchronization. **OFF:** Do not operate in phase synchronization.

a) When setting items 002 and 003, watch the monitor screen, and adjust to the required state.

b) When displaying time code values, there is a slight time delay. Therefore, when creating a tape for off-line editing, the information inserted in the upper half of the screen may be delayed by one frame.

(Continued)

Item number	Item name	Settings
005	DISPLAY INFORMATION SELECT	Determines the kind of character information to be output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector when the CHARACTER switch on the subsidiary control panel is set to ON. **T&STA :** Time data display information and the unit's status. **T&UB:** Time data display information and the user's bits. **T&CTL:** Time data display information and CTL. **T&T:** Time data display information and time code (LTC or VITC). **TIME:** Time code (LTC or VITC) only. If there is a overlap between the setting of this item and the setting of the control panel, it is automatically avoided. For example, if CTL is selected on the control panel and this menu item setting is T&CTL, then CTL and LTC are output.
006	LOCAL FUNCTION ENABLE	Determines which buttons on the control panel are enabled when this unit is controlled from external equipment. **DIS:** All buttons and switches are disabled. **ST&EJ :** Only the STOP button and EJECT button are enabled. **ENA:** All buttons and switches except the RECORDER button and PLAYER button are enabled.
007	TAPE TIMER DISPLAY	Determines whether to display the CTL count in 12-hour mode or 24-hour mode. **+ –12H :** 12-hour mode **24H:** 24-hour mode
008	MONITORING SELECTION FOR VTR-TO-VTR EDIT	For recorder-player editing with only one monitor connected to the recorder, determines whether the recorder is forced into E-E mode when the recorder's PLAYER button is pressed to view the player's playback signals on the monitor. **MANU :** Do not force the recorder into E-E mode. **AUTO:** Force the recorder into E-E mode-
009[a)]	CHARACTER TYPE	Determines the type of characters such as time code output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **WHITE :** White letters on a black background. **BLACK:** Black letters on a white background. **W/OUT:** White outline letters. **B/OUT:** Black outline letters.
011[a)]	CHARACTER V-SIZE	Determines the vertical size of characters such as time code output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **X1 :** Standard size **X2:** 2 times standard size
013	525/625 SYSTEM SELECT **Before using this menu item, consult the person responsible for the installation.**	Specify whether to enable switching between the 525 (NTSC) and 625 (PAL) systems. **OFF :** Do not enable system switching. **ON:** Enable system switching. Setting this item to ON and switching the system enables the unit to operate in the system switched to. *For the switching between 525/625 line systems, see page 7-6.* **Note** For the basic and extended menus, separate settings are saved for 525 (NTSC) and 625 (PAL) modes. When you switch systems, all menu items change to the settings established in the new system. (These are different from the settings for the mode before switching.)

a) When setting items 009 and 011, watch the monitor screen, and adjust to the required state.

(Continued)

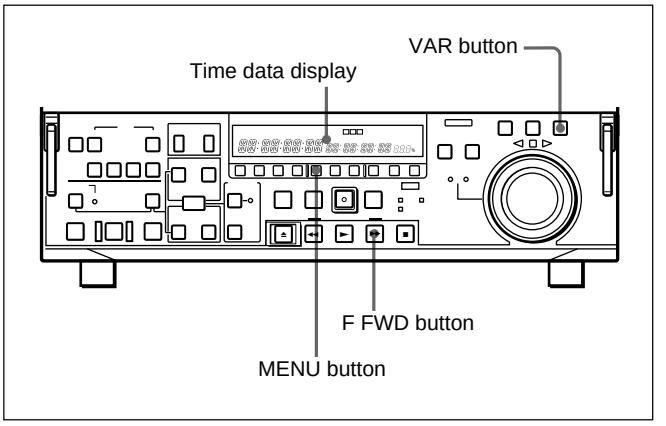
Item number	Item name	Settings
B01	RECALL BANK 1	Set to ON to recall menu settings from menu bank 1.
B02	RECALL BANK 2	Set to ON to recall menu settings from menu bank 2.
B03	RECALL BANK 3	Set to ON to recall menu settings from menu bank 3.
B04	RECALL BANK 4	Set to ON to recall menu settings from menu bank 4.
B11	SAVE BANK 1	Set to ON to save current menu settings to menu bank 1.
B12	SAVE BANK 2	Set to ON to save current menu settings to menu bank 2.
B13	SAVE BANK 3	Set to ON to save current menu settings to menu bank 3.
B14	SAVE BANK 4	Set to ON to save current menu settings to menu bank 4.
B20	RESET SETUP	Set to ON to reset current active settings to factory default values.

7-2-2 Basic Menu Operations

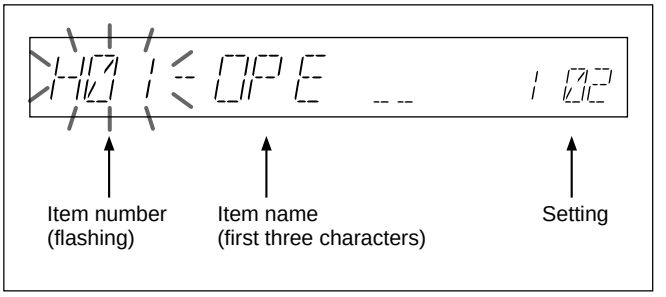
This section describes the basic menu displays and how to change the settings.

For information about how to use item 013, see the section "Switching between 525/625 line systems (menu item 013)" (page 7-6), and for information about how to use items B01 to B14, see the section "Menu bank operations (menu items B01 to B14)" (page 7-8).

Displaying the menus

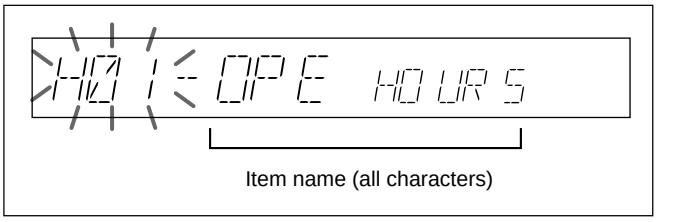


Press the MENU button, turning it on.
The F FWD button and VAR button light, and the setting of the currently selected menu item appears in the time data display area 1 and 2.



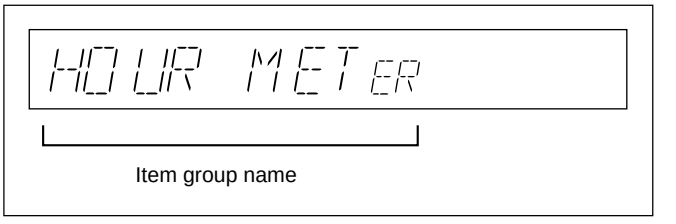
To display the full item name

Hold down the F FWD button.



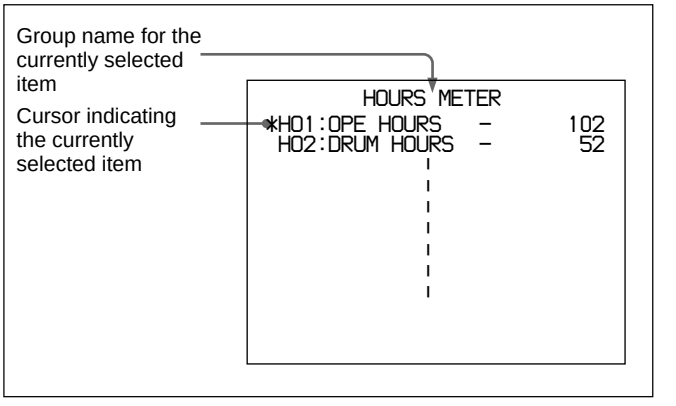
To display the item group name

Items in the menu are arranged in groups, by the 100's digit of the item number. To display the name of the group to which the currently selected item belongs, hold down the VAR button.



To display menus on the monitor

Set the CHARACTER switch on the subsidiary control panel to ON, then press the MENU button. You can now view the menu as shown in the following figure, on a monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or the SDI OUTPUT 3 (SUPER) connector.


Group name for the currently selected item
Cursor indicating the currently selected item
HOURS METER
*H01:OPE HOURS - 102
H02:DRUM HOURS - 52

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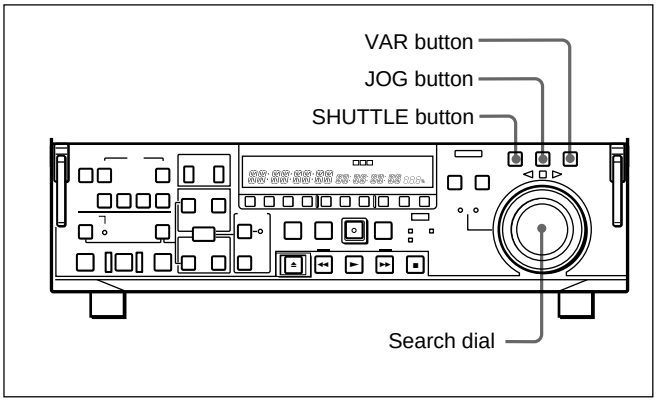
Changing the currently displayed menu item



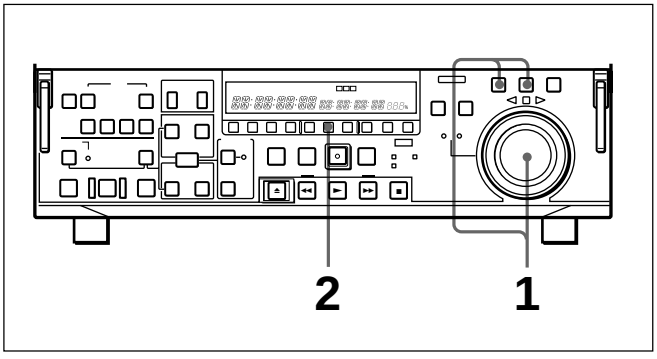
Turn the search dial.
Turning the search dial in the forward direction increments the item number, and turning it in the reverse direction decrements the item number.
If you press the SHUTTLE button or JOG button, turning it on, then turn the search dial, the item number changes at a rate depending on the search dial position (when the SHUTTLE button is lit) or on the search dial rotation rate (when the JOG button is lit).

To skip from one item group to the next

Hold down the VAR button, and turn the search dial.

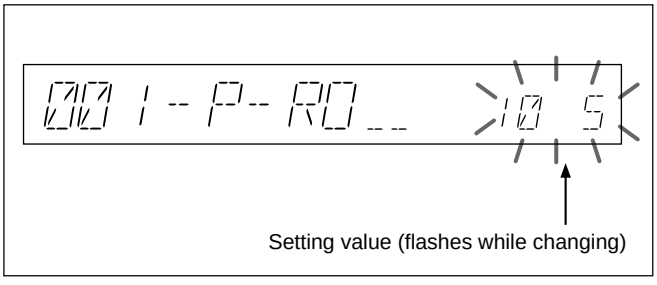
Changing a menu item setting value

To change the setting value of the currently displayed menu item, use the following procedure.



1 Holding down the SHUTTLE button or JOG button, turn the search dial.

The setting value changes at a rate depending on the search dial position (when the SHUTTLE button is lit) or on the search dial rotation rate (when the JOG button is lit).



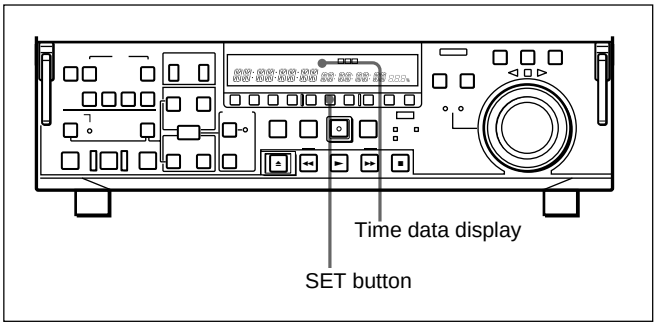
2 When the desired setting value is displayed, press the SET button.

This saves the new setting value, and the menu display disappears from the time data display area.

To abandon making a change

Press the MENU button before pressing the SET button.
The menu display disappears from the time data display area, without the new setting value being saved.

Resetting the menu settings to their factory default values (menu item B20)



1 Set menu item B20 RESET SETUP to ON.

"PUSH SET BTN" appears in the time data display area 1 and 2, and "Push SET button" appears on the monitor screen.

2 Press the SET button.

The current active menu settings *(see page 7-8)* are reset to their factory default settings.

3 Press the SET button again.

The settings are saved and the menu display disappears from the time data display area.

Switching between 525/625 line systems (menu item 013)

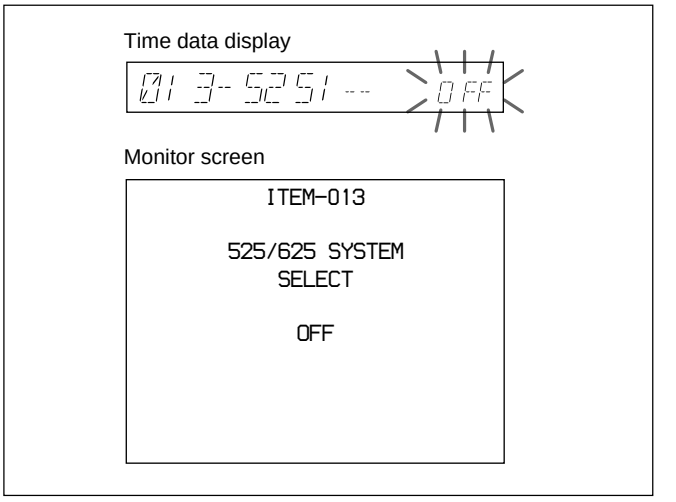
Using the following procedure, you can set basic menu item 013, 525/625 SYSTEM SELECT, to "ON", and then switch between 525 (NTSC) and 625 (PAL).

Note

Before carrying out this operation, consult the person responsible for the installation.

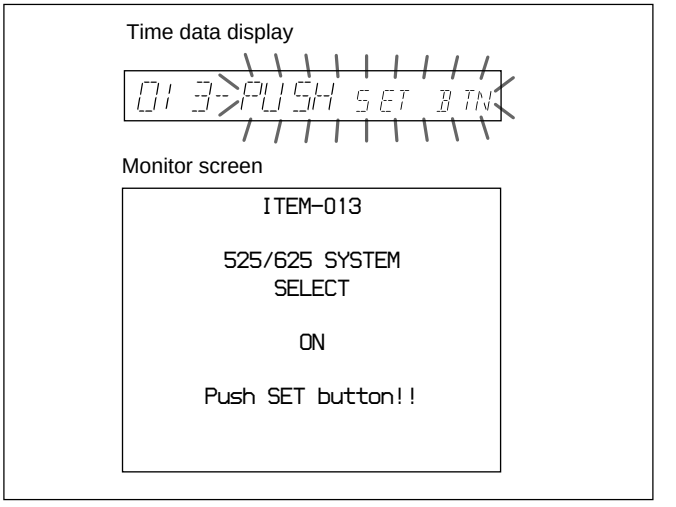
1 Select menu item 013.

The time data display and the monitor[1)] screen show the following displays.



2 Holding down the JOG button, turn the search dial to change the setting from "OFF" to "ON".

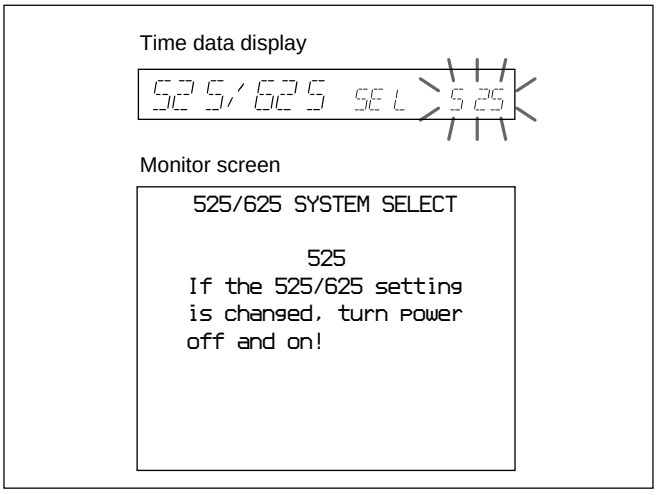
The displays change as follows.



1) A monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or the SDI OUTPUT 3 (SUPER) connector

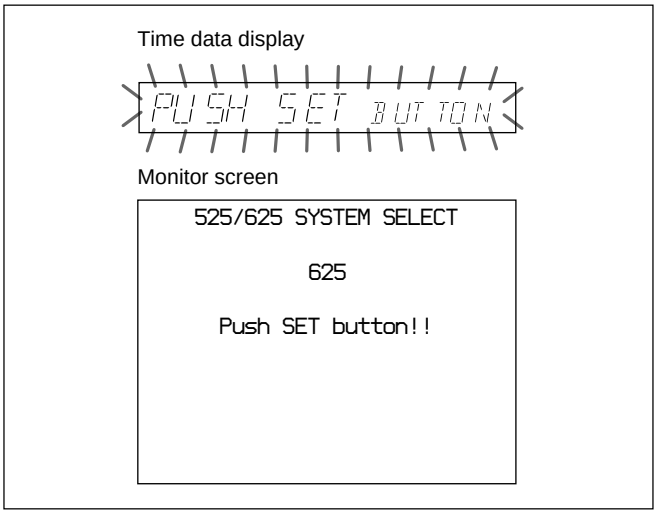
3 Press the SET button.

The displays change as follows.



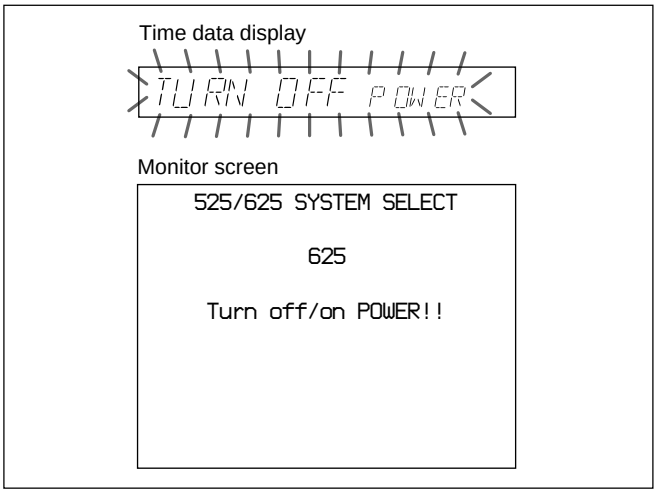
4 Holding down the JOG button, turn the search dial to change the setting from “525” to “625”.

The displays change as follows.



5 Press the SET button.

The displays change as follows.



To abandon the 525/625 setting operation

Press the MENU button a required number of times to exit from the menu.

6 Turn the POWER switch off momentarily, then on again.

This switches from a 525 (NTSC) to 625 (PAL) system; the 525 indicator goes off, and the 625 indicator lights.
The menu settings disappear from the time data display, which returns to the normal indications.

Menu bank operations (menu items B01 to B14)

This unit allows four different complete sets of menu settings to be saved in what are termed “menu banks” numbered 1 to 4. Saved sets of menu settings can be recalled for use as required.

To jump to menu item B01

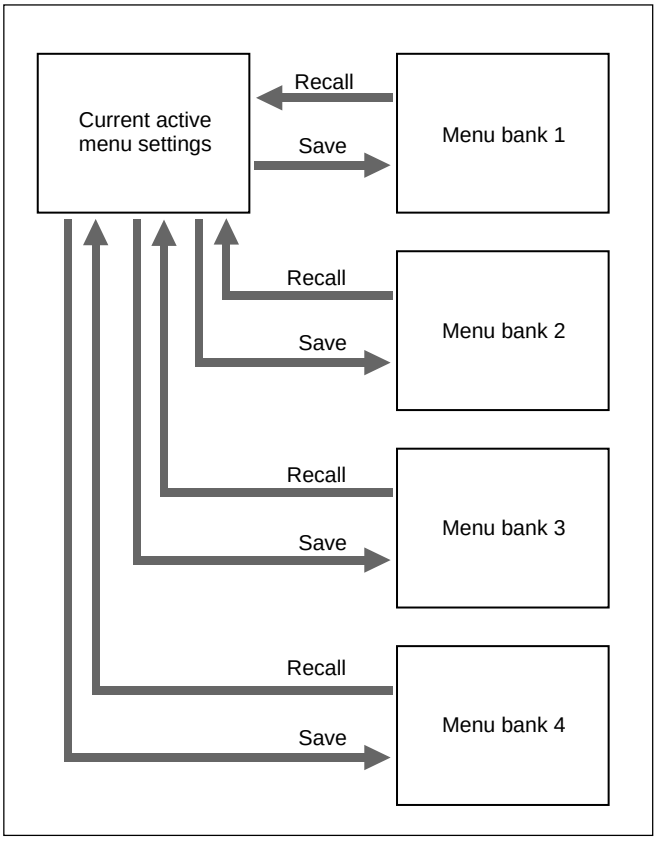
You can recall any required menu item by turning the search dial after pressing the MENU button.
If you press the MENU button first, then the CTL/TC/UB button, you can jump directly to menu item B01 or H01. The recalled menu item toggles between B01 and H01 every time you press the CTL/TC/UB button.

Saving the current active menu settings

Set one of menu items B11 SAVE BANK 1 to B14 SAVE BANK 4 to ON, depending on which of the menu banks you wish to save in, then press the SET button.

Recalling settings from a menu bank

Set one of menu items B01 RECALL BANK 1 to B04 RECALL BANK 4 to ON, depending on which of the menu banks you wish to recall from, then press the SET button.



7-3 Extended Menu

7-3-1 Items in the Extended Menu

The extended menu contains the following items.
In the “Settings” column of the table, the factory default settings are indicated by an enclosing box.

Menu items in the 100s, relating to the control panels

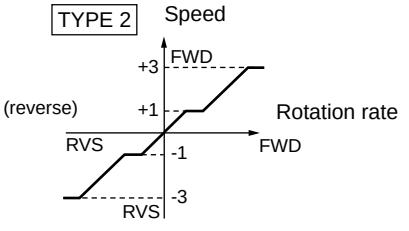
Item number	Item name	Settings
101	SELECTION FOR SEARCH DIAL ENABLE	Select how the unit enters the search mode. **[DIAL]:** Turn or press the search dial except during recording/editing, or press the JOG, SHUTTLE, or VAR button. **KEY:** Press the JOG, SHUTTLE, or VAR button.
102	MAXIMUM SPEED	Select the fast forward and rewind tape speed during tape playback, and the search mode speed during playback from tape or hard disk. **[MAX]:** Perform fast forward, rewind, and search mode playback at the maximum speeds. **MX/24:** Perform fast forward and rewind at the maximum speeds, and search mode playback at up to 24 times normal speed. **X24:** Perform fast forward and rewind at 24 times normal speed, and search mode playback at up to 24 times normal speed. **Maximum fast forward and rewind speeds:** 78 times normal speed **Maximum search mode speeds:** 78 times normal speed
104	AUDIO MUTING TIME	Select the length of time for which audio muting occurs when the unit switches to playback either from stopped or from still playback in the search mode. **[OFF]:** Set the audio muting time to zero (i.e. no muting). **0.1S ... 1.0S:** Set the audio muting time from 0.1 to 1.0 second, in 0.1-second increments.
105	REFERENCE SYSTEM ALARM	Select whether or not to display a warning when the video/audio reference signal selected by the OUT REF switch on the subsidiary control panel, is not supplied or is out of phase with the input video signal. **OFF:** No warning. **[ON]:** Flash the STOP button as a warning.
106	CAPSTAN LOCK	Select the capstan servo lock mode. **[SW]:** The capstan servo lock mode is determined by the CAPSTAN LOCK switch on the subsidiary control panel. **2F:** The capstan servo locks every two fields regardless of the setting of the CAPSTAN LOCK switch on the subsidiary control panel. **4F:** The capstan servo locks every four fields regardless of the setting of the CAPSTAN LOCK switch on the subsidiary control panel. **8F (For 625 mode only):** The capstan servo locks every eight fields regardless of the setting of the CAPSTAN LOCK switch on the subsidiary control panel.
107	REC INHIBIT LAMP FLASHING	Select whether or not to flash the REC INHIBIT indicator when the REC INHIBIT switch on the subsidiary control panel is set to OFF and the REC inhibit plug on the cassette is pressed in. **[OFF]:** Do not flash the REC INHIBIT indicator. **ON:** Flash the REC INHIBIT indicator.
108	AUTO EE SELECT	When a digital cassette is inserted and the PB and PB.EE buttons on the lower control panel are set to the PB/EE mode, select the VTR modes in which input video and audio signals are automatically handled in EE mode. **[S/F/R]:** In STOP/EJECT/F.FWD/REW modes **STOP:** In STOP/EJECT modes
109	FORCED EE WHEN TAPE UNTHREAD	During tape threading and unthreading, and when no cassette is inserted, select whether the PB and PB.EE buttons on the lower control panel control the output signal PB/EE setting. **[ON]:** No control by the PB and PB.EE buttons (the signal is always an EE signal). **OFF:** Control by the PB and PB.EE buttons.

(Continued)

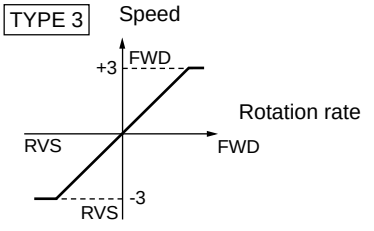
Menu items in the 100s, relating to the control panels (Continued)

Item number	Item name		Settings
111	TSO/FEED PLAY		Select whether to enable tape speed override mode or feed play mode. **DIS :** Disable both tape speed override mode and feed play mode. **TSO:** Enable tape speed override mode. **FEED:** Enable feed play mode.
116	JOG DIAL RESPONSE		Select the tape speed characteristics for the jog dial rotation rate (VTR commands). **TYPE1 :** Tape speed varies linearly over the range –1 to +1. **TYPE2:** Tape speed varies stepwise as shown in the figure below[a] over the range –3 to +3. (Characterized by a zone around –1 and +1 where the tape speed is independent of the rotation rate) **TYPE3:** Tape speed varies linearly over the range –3 to +3, as shown in the figure below[b]. **TYPE4:** Tape speed varies stepwise as shown in the figure below[c] over the range –2 to +2. (Characterized by a zone around –1 and +1 where the tape speed is independent of the rotation rate)
117	CONTROL PANEL SELCTION		Select the control panel function when the CONTROL PANEL switch on the subsidiary control panel is set to EXT. **SW :** Only the control panel connected to the external control connector on the connector panel functions. **PARA :** Both the control panel connected to the external control connector and the control panel of this unit function.
118	KEY INHIBIT SWITCH EFFECTIVE AREA		Select which switches and buttons can be operated when the KEY INHIBIT switch on the subsidiary control panel is set to ON. The following sub-items control different sets of switches and buttons independently.
	Sub-item		
	118-1	REMOTE SELECT	Select whether the REMOTE 1 and 2 buttons in the upper control panel is enabled. **DIS :** Disabled. **ENA:** Enabled.
	118-2	MON./ INPUT SEL	Select whether the audio signal selection buttons in the upper control panel are enabled. **DIS :** Disabled. **ENA:** Enabled.
	118-3	CONTROL PANEL	Select which switch and button operations can be carried out from the control panel of this unit or an external control panel connected to this unit. **DIS :** All switches and buttons are disabled. **EDIT:** All switches and buttons for editing operations are disabled. **ENA:** All switches and buttons are enabled.
119	VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		Select the playback speed range when carrying out playback in variable mode from the control panel of this unit. **OFF :** –1 to +2 times normal speed. **ON:** 0 to +1 times normal speed.
120	CTL LOCK IN VAR/SHTL		Select whether the tape transport should be phase-locked to the CTL signal during playback in variable or shuttle mode. **OFF :** Not phase-locked. **ON:** Phase-locked at the following speeds: –1, –0.5, 0.5, 1.0 and 2.0 times normal.

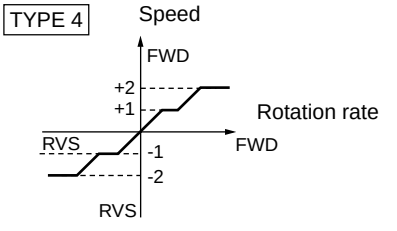
a)



b)



c)



Menu items in the 200s, relating to the remote control interface

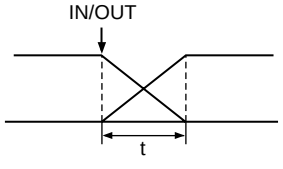
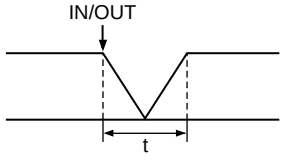
Item number	Item name	Settings
201	PARA RUN	Select whether or not to use synchronized operation for two or more VTRs. **DIS:** No synchronized operation. **ENA:** Use synchronized operation. **Note** To use synchronized operation for two or more VTRs, set item 201 to “ENA” on all of the VTRs.
202	CF FLAG (valid only in 625 mode)	Select the mode for locking to the color framing sent from the remote controller. **8F :** Eight-field locking mode **4F/8F:** Four- or eight-field locking mode

Menu items in the 300s, relating to editing operations

Item number	Item name	Settings
301	VAR SPEED RANGE FOR SYNCHRONIZATION	Select the playback speed range when carrying out playback in variable mode from a remote control unit connected to the REMOTE-1 IN (9P) connector or REMOTE-1 OUT (9P) connector. **[–1~+2]:** –1 to +2 times normal speed. **~+2.3 :** –1.5 to +2.3 times normal speed. **wide :** undefined
302	CAPSTAN RE-LOCKING DIRECTION	**In 525 mode** When the CAPSTAN LOCK switch on the subsidiary control panel is set to 4FD select whether the capstan servo should lock by accelerating or decelerating. **[DECEL]:** Lock by decelerating. **ACCEL:** Lock by accelerating.
		In 625 mode When the CAPSTAN LOCK switch on the subsidiary control panel is set to 4FD or 8FD select whether the capstan servo should lock by accelerating or decelerating. **DECEL:** Lock by decelerating. **[ACCEL]:** Lock by accelerating.
305	SYNC GRADE	When editing in phase-synchronized mode with item 004 set to ON, select the target phase synchronization accuracy. **[ACCUR]:** ±0 frame accuracy. **ROUGH:** ±1 frame accuracy.
306	DMC INITIAL SPEED	Select the initial speed automatically set when carrying out DMC editing. **[MANUAL]:** The speed determined by the rotation of the search dial. **PLAY:** Normal playback speed. **STILL:** Stationary. **±0.03~±1, +2**: Speed set in the range ±0.03 to +2 (select from +2, ±1, ±0.5, ±0.2, ±0.1, ±0.03).
307	AUTO-DELETION FOR INCONSISTENT DATA	Select what happens when an erroneous edit point is set. **[MANU]:** A warning is given by flashing the DELETE button on the lower control panel. The operator must manually delete the unnecessary edit points or correct the erroneous edit point. **NEG&E:** When inconsistent edit points are set, such as when an OUT point is before an IN point, or an audio OUT point is before an audio IN point, or when too many edit points are specified, the previously set edit point is deleted. **NEG:** When inconsistent edit points are set, such as when an OUT point is before an IN point, or an audio OUT point is before an audio IN point, the previously set edit point is deleted. When too many edit points are specified, the DELETE button on the control panel flashes to give a warning. **Note** Pressing the button corresponding to an edit point to be deleted and the DELETE button simultaneously, deletes the edit point. If an erroneous edit point is set (the DELETE button is flashing), editing is not executed.
308	SELECTION OF STD/ NON-STD FOR COMPOSITE VIDEO IN (Enabled only when the DNW-75 is in 525 mode or the DNW-75P is in 625 mode.)	Select the STD or NON-STD mode in accordance with a composite video input. **[AUTO]:** Detect automatically whether the input video luminance and chrominance signals are interleaved or not. If they are interleaved, select the STD mode. If they are not interleaved, select the NON-STD mode. **STD:** The STD mode is always used (forced STD mode). **N-STD:** Use this setting when color framing of the input video signal is unstable (forced NON-STD mode).

(Continued)

Menu items in the 300s, relating to editing operations (Continued)

Item number	Item name	Settings
309	SERVO/AV REFERENCE SEL	Select the servo reference signal. **AUTO1 :** During recording, an analog component/composite or digital input video signal is used as the servo reference signal. During playback, the signal selected by the OUT REF switch on the subsidiary control panel is used as the servo reference signal. If the signal selected by the OUT REF switch on the subsidiary control panel is not connected, an internal reference signal is used. **AUTO2:** When the OUT REF switch is set to REF, and any of the ASSEMBLE, VIDEO, and AUDIO CH1 to CH4 buttons is lit, the reference signal for video/audio signal processing is locked to the input video signal. **EXT:** The servo reference signal is forced to be "EXT" (an external reference video input signal is used).
310	REC INHIBIT	Select the conditions under which recording is inhibited when the REC INHIBIT switch on the subsidiary control panel is set to ON. **ALL :** All tape recording is inhibited. **CRASH:** Normal tape recording is inhibited. Select this setting when you wish to carry out assemble editing. **VIDEO :** Inhibit recording of video and CTL signals. **AUDIO :** Inhibit recording of audio and CTL signals. **Note** When the REC INHIBIT switch is set to ON, the REC INHIBIT indicator on the lower control panel lights. If an operation inhibited by this item is attempted, the REC INHIBIT indicator flashes.
311	ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	Items 311 to 314: Selecting the method of edit preset setting for the digital audio channels on this unit by means of the analog audio preset control function of an editor or remote controller when carrying out digital audio editing using a remote controller or an editor (such as the BVE-600) which does not have a function for controlling digital audio edit preset. Set edit preset of each digital audio channel (channels 1 to 4) of this unit on or off according to the analog audio preset specified by the remote controller or editor. **NO DEFINITION** **ANALOG CH1:** Follow edit preset of analog channel 1. **ANALOG CH2:** Follow edit preset of analog channel 2. **ANALOG CH1+CH2:** Follow edit preset of analog channel 1 or 2. The default settings for each item are as follows: 311 : **ANALOG CH1** 312 : **ANALOG CH2** 313 : **NO DEFINITION** 314 : **NO DEFINITION**
312	ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	
313	ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	
314	ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	
317	AUDIO EDIT MODE	Select the type of audio transition used for digital audio editing. **CUT EDIT:** Cut editing (audio discontinuity at transition point, and possible noise during playback). **CROSS FADE :** Cross-fade  **FADE IN/OUT:** Fade in and out  t: Time set by item 803 DIGITAL AUDIO FADE TIME.

(Continued)

Menu items in the 300s, relating to editing operations (Continued)

Item number	Item name	Settings
318	EDIT RETRY	For two-VTR editing, set when this unit is used as the recorder. Selects the operation if the recorder was not synchronized in time. **OFF:** Editing is not carried out, and the unit stops. **ON:** The editing is automatically retried (up to twice).
319	PREREAD SELECT	Specify the preread operation. **A/V:** Preread for both audio and video. **AUDIO:** Preread for audio only. **VIDEO:** Preread for video only. The preread operation can be controlled with the PREREAD button on the control panel or from the 9-pin remote control interface.
320	DIGITAL AUDIO PROCESS ON EDIT POINT	Select the treatment of audio at edit points. **CUT:** Carry out a cut (possibly resulting in audio discontinuities at the edit point). **FADE:** Fade out and fade in.
326	AUTOMATIC IN ENTRY AFTER AUTO EDIT	Select whether or not to automatically set the OUT point of the previous edit as the next IN point at the end of an automatic edit. **OFF:** No automatic setting. **R:** Set recorder IN point automatically. **R & P:** Set recorder IN point automatically, and also player IN point in two-VTR editing.

Menu items in the 400s, relating to preroll

Item number	Item name	Settings
401	FUNCTION MODE AFTER CUE-UP	Select the state that the unit goes into after a cuing-up operation. **STOP:** Stops (the "STOP mode"). **STILL:** Still playback (in search mode). **Note** When controlling this unit from an editor with the standard constants set, select "STOP".
402	TIME REFERENCE FOR PREROLL	When prerolling a tape with timecode discontinuities, select whether or not to use CTL pulses to count timecode from before a discontinuity. **CTL:** Use CTL pulses to count timecode. **TC:** Do not use CTL pulses to count timecode.
403	AUTOMATIC PREROLL REFERENCE ENTRY	Select whether or not the edit IN point is automatically set by pressing the PREROLL button, when the IN point is not set before starting preroll. **DIS:** IN point is not set automatically. **ENA:** IN point is set automatically.
405	CUEUP BY CTL	Select the tape transport mode when cuing. This setting is valid only when the CTL/TC/UB button on the lower control panel is set to CTL. **CAP:** During cuing up, the tape transport is in the "pinch ON" state (maximum tape speed 10 times normal). **REEL:** During cuing up, the tape transport is in the "pinch OFF" state. As the tape approaches the cue up point and the tape speed drops, the tape transport switches to the "pinch ON" state.[a)] To give priority to editing accuracy, select "CAP".

a) When controlled from an editor (BVE-2000/9100 etc.), selecting "REEL" allows high-speed cuing up.

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Menu items in the 500s, relating to tape protection

Item number	Item name	Settings
501	STILL TIMER	Select the time delay from the tape transport stopping (either the “STOP mode” or the still playback mode in search mode) until the unit automatically switches to the tape protection mode, in order to protect the video heads and the tape. **0.5S ... 8M ... 30M:** Set the value in the range 0.5 seconds to 30 minutes.
502	TAPE PROTECTION MODE FROM SEARCH	Select the operation of the protection mode to protect the video heads and tape when in the still playback mode in search mode (jog/shuttle). **STEP:** Step forward at 1/30 normal speed every 2 seconds. **STDBY:** Switch to “Standby OFF mode” (the unit not on standby). **T REL:** Switch to tension release mode (the tape tension slackened).
503	TAPE PROTECTION MODE FROM STOP	Select the operation of the protection mode to protect the video heads and tape when stopped (the “STOP mode”). **STDBY:** Switch to “Standby OFF mode” (the unit not on standby). **T REL:** Switch to tension release mode (the tape tension slackened).
504	DRUM ROTATION IN STANDBY OFF	Select whether the drum rotates in “Standby OFF mode”. **OFF:** Drum does not rotate. **ON:** Drum rotates.
505	STILL TENSION	Select the tape tension state in the still playback mode. **NORM:** Normal tape tension is maintained during still playback mode, ready for playback. **LOOSE:** Reduce the tape tension further from the NORM setting. (Select “LOOSE” when the unit is on standby for a long period of still playback, for example, in a library management system (LMS).) **Note** When LOOSE is selected, playback cannot be guaranteed.

Menu items in the 600s, relating to the time code generator

Item number	Item name	Settings
601	VITC POSITION SEL-1	**In 525 mode** Select a line to insert the VITC in. **12H ... 16H ... 20H:** Select any line from 12 to 20. **Note** You can insert the VITC signal in two places. To insert it in two places, set both items 601 and 602.
		In 625 mode Select a line to insert the VITC in. **9H ... 19H ... 22H:** Select any line from 9 to 22. **Note** You can insert the VITC signal in two places. To insert it in two places, set both items 601 and 602.

(Continued)

Menu items in the 600s, relating to the time code generator (Continued)

Item number	Item name	Settings
602	VITC POSITION SEL-2	**In 525 mode** Select a line to insert the VITC in. **12H ... 18H ... 20H:** Select any line from 12 to 20. **Note** You can insert the VITC signal in two places. To insert it in two places, set both items 601 and 602.
		In 625 mode Select a line to insert the VITC in. **9H ... 21H ... 22H:** Select any line from 9 to 22. **Note** You can insert the VITC signal in two places. To insert it in two places, set both items 601 and 602.
603	ID CODE PRESET	Select whether or not to set the ID code. **OFF:** Do not set the ID code. **ON:** Set the ID code. **To set the ID code:** ① Set this item to ON. The HOLD indicator on the lower control panel lights, and the time data display areas flash. ② Turn the search dial to select the column, then hold down the SHUTTLE or JOG button while turning the search dial to change the digit value. ③ When the ID code setting is complete, press the SET button. This saves the ID code setting, and the setting of this item returns to “OFF”.
604	ID CODE SW	Select whether or not to record the ID code set using item 603 in the user bits. **OFF:** Record the normal data in the user bits. **ON:** Record the ID code in the user bits.
605	TCG REGEN MODE	Select the signals to be regenerated when the time code generator is in the regeneration mode (i.e., when the REGEN/PRESET switch in the time code setting section is set to REGEN, or the unit is in automatic edit mode). **TC&UB:** Both the time code and user bit signals are regenerated. **TC:** Only the time code signal is regenerated. **UB:** Only the user bit signal is regenerated.
606	TC OUTPUT SIGNAL IN REGEN MODE	Select the signal output from the TIME CODE OUT connector during normal (x1) speed playback in the following three cases: • For tape playback when the INT/EXT switch in the time code setting section is set to INT and the PRESET/REGEN switch is set to REGEN. • For preroll or postroll playback during automatic editing with the tape. **TAPE:** During tape playback, the playback time code signal is output without regeneration. **REGEN:** The playback time code is output after regeneration.
607	U-BIT BINARY GROUP FLAG	Select the user bits to be used in the time code generated by the time code generator. **000:** Character set not specified. **001:** 8-bit characters compliant with ISO 646 and ISO 2022. **010:** Undefined. **011:** Undefined. **100:** Undefined. **101:** SMPTE 262M page/line multiplex system. **110:** Undefined. **111:** Undefined.

(Continued)

Menu items in the 600s, relating to the time code generator (Continued)

Item number	Item name	Settings
608	PHASE CORRECTION	Select whether or not to carry out phase correction control on the LTC generated by the time code generator. **OFF:** No control. **ON:** Carry out control.
609	TCG CF FLAG	Select whether or not the color framing flag is set in the blank bit of the time code data. **OFF:** Color framing flag is not set. **ON:** Color framing flag is set. **AUTO:** Color framing flag is set or not depending upon the color framing phase relationship between the recorded video signal and the time code signal. When AUTO is selected, color framing is controlled as follows according to the operating mode of the time code generator. • In INT PRESET mode (the INT/EXT switch is set to INT, the PRESET/REGEN switch is set to PRESET, and in modes other than the automatic editing mode): the time code signal is generated with color framing locked to the video signal, and the color framing flag is set. • In INT REGEN mode (the INT/EXT switch is set to INT, the PRESET/REGEN switch is set to REGEN, and in the automatic editing mode), and also in EXT mode (the INT/EXT switch is set to EXT): the time code signal is generated with color framing locked to the video signal, and the color framing flag is not set.
610	REGEN CONTROL MODE	In editing performed using the control panel of this unit, select whether or not the time code is automatically regenerated. **AS&IN:** In editing with this unit as the recorder, regardless of the setting of the PRESET/REGEN switch, in assemble and insert editing, the time code generator regenerates according to the time code on the tape. **ASSEM:** In editing with this unit as the recorder, regardless of the setting of the PRESET/REGEN switch, in assemble editing only, the time code generator regenerates according to the time code on the tape. **MANU:** Regardless of whether this unit is the recorder or player, the time code generator operates in accordance with the setting of the INT/EXT switch. **FULL:** Regardless of whether local or remote, when any of the ASSEMBLE, VIDEO, and AUDIO CH1 to CH4 buttons is lit, the time code generator regenerates on the time code played back from the tape.

Menu items in the 700s, relating to video control

Item number	Item name		Settings
701	SELECTION OF VIDEO/ SYNC DELAY		An EE video signal is output delayed with respect to the video input signal by the time for video circuit processing. With this item, select whether or not to delay the sync signal attached to the output video signal by an amount corresponding to the delay. **SYNC :** Delay the sync signal by the corresponding amount before attaching it. **VIDEO:** Attach a sync signal with the same timing as the input signal.
703	BLANK LINE SELECT		Switch blanking on or off for individual lines in the vertical blanking interval. The Y/C signal and odd/even fields are blanked simultaneously.
	Sub-Item		
	0	ALL LINE	**- - -** : Specify the blanking for each line separately. **BLANK:** Regardless of the setting of other sub-items, blank all lines which can be specified in this menu item. **THROU:** Regardless of the setting of other sub-items, switch off blanking for all lines which can be specified in this menu item.
In 525 mode	12 ... 19	LINE 12 ... LINE 19	Specify blanking for lines 12 to 19. **BLANK :** Carry out blanking. **THROU:** Switch off blanking.
	20	LINE 20	Specify blanking for lines 20. **BLANK :** Carry out blanking. **HALF:** Carry out half-blanking. **THROU:** Switch off blanking.
In 625 mode	9 ... 22	LINE 9 ... LINE 22	Specify blanking for lines 9 to 22. **BLANK :** Carry out blanking. **THROU:** Switch off blanking.
	23	LINE 23	Specify blanking for line 23. **HALF :** Carry out half-blanking. **THROU**: Switch off blanking.
704	DECODE Y/C SEP MODE (Enabled only when the DNW-75 is in 525 mode or the DNW-75P is in 625 mode.)		Select the method of processing the input video signal in the vertical blanking interval, independently for each line.
	Sub-Item		
For DNW-75	12 ... 20	LINE 12 ... LINE 20	Make the selection for lines 12 to 20. **BPF:** Carry out Y/C separation. **B&W :** Treat all as luminance signals.
	21 ... 22	LINE 21 ... LINE 22	Make the selection for lines 21 and 22. **BPF:** Carry out Y/C separation. **B&W:** Treat all as luminance signals. **COMB :** Process with an appropriate Y/C separation.
For DNW-75P	9 ... 22	LINE 9 ... LINE 22	Make the selection for lines 9 to 22. **BPF:** Carry out Y/C separation. **B&W :** Treat all as luminance signals.
705	EDGE SUBCARRIER REDUCER MODE		During recording and playback of a composite signal, in the playback circuit the edge subcarrier reducer (ESR) is automatically switched on or off according to the VTR operation. When recording a “Non-Standard” signal, for example, if the color edges are not as good as with a proper signal, the ESR can be forced on. This item makes this selection. **AUTO :** ESR is switched on and off automatically. **ON:** ESR operation is forced on.

(Continued)

Menu items in the 700s, relating to video control (Continued)

<table>
<tr><th>Item number</th><th colspan="2">Item name</th><th>Settings</th></tr>
<tr><td>706</td><td colspan="2">VERTICAL BLANKING V SHIFT</td><td>When the “Y-add” a) function is operative, when the playback signal is an odd field and the reference signal is an even field, the playback signal is shifted by 1H (1 line) to suppress the vertical movement of the playback picture. This item selects whether or not to apply a 1H shift to the vertical blanking interval.
ON: Carry out vertical blanking shift.
OFF: Do not carry out vertical blanking shift.

Note
If the 1H shift is applied during the vertical blanking interval, the signal recorded in line 21 may intermittently appear in jog or variable playback mode.</td></tr>
<tr><td>707</td><td colspan="2">FORCED VERTICAL INTERPOLATION OFF</td><td>The “Y-add” function is normally switched on automatically during jog or variable playback. This item selects whether or not to force the “Y-add” function off.
AUTO: Automatically switch the “Y-add” function on.
OFF: Force the “Y-add” function off.</td></tr>
<tr><td rowspan="3">709</td><td colspan="2">CAV LEVEL FORMAT</td><td rowspan="2">Select whether the analog component input/output should be D-1 or Betacam. (Selectable only in 525 mode)
<table>
<tr><th>Format</th><th>Color bars</th><th>Y video</th><th>V sync</th><th>R–Y/B–Y</th></tr>
<tr><td>D-1 CAV</td><td>100/0/100/0</td><td>700 mV</td><td>300 mV</td><td>700 mV</td></tr>
<tr><td>Betacam</td><td>100/7.5/77/7.5</td><td>714 mV</td><td>286 mV</td><td>700 mV</td></tr>
</table></td></tr>
<tr><td colspan="2">Sub-Item</td></tr>
<tr><td>0</td><td>INPUT CAV LEVEL</td><td>Select the analog component input format.
B-CAM: Betacam
D1: D-1</td></tr>
<tr><td>1</td><td>OUTPUT CAV LEVEL</td><td>Select the analog component output format.
B-CAM: Betacam
D1: D-1</td></tr>
<tr><td>710</td><td colspan="2">INTERNAL VIDEO SIGNAL GENERATOR</td><td>Select the test signal to be output from the VTR’s internal test signal generator. When the selection is other than “OFF”, pressing the VIDEO INPUT SELECT switch for at least 3 seconds while it is lit causes all the VIDEO INPUT SELECT indicators to light and the internal test signal generator to operate and output the selected test signal. This signal can also be recorded.
OFF: No test signal is generated. (The VTR operates normally.)
CB100 b): 100% color bar signal
CB75 b): 75% color bar signal
CB75R: 75% color bar signal (reverse)
BOW: Bowtie signal
PLSBR: Pulse & bar signal
MLTBS: Multi-burst signal
HSWP: H sweep signal
5STEP: 5-step signal
RAMP: Ramp signal
SH: Shallow ramp signal
RED: Red signal
GRAY: 50% flat signal
WHITE: 100% flat signal
BB: Black burst signal
SDI: SDI check field signal
NTC7: NTC 7 test signal (selectable only in 525 mode)
LN330: Line 330 test signal (selectable only in 625 mode)</td></tr>
</table>

a) The “Y-add” function is a circuit operation to interpolate the video signal vertically during jog or variable playback for the purpose of reducing the vertical movement of the playback picture.

b) The factory default setting is “CB75” for the DNW-75 and “CB100” for the DNW-75P.

(Continued)

Menu items in the 700s, relating to video control (Continued)

Item number	Item name		Settings
712	VIDEO PROCESS ON CAP LOCK 2FIELD		When the CAPSTAN LOCK switch on the subsidiary control panel or menu item 106 is set to 2FLD for 2-field playback, select whether or not to carry out a "picture shift". **OFF:** No picture shift. **ON:** Carry out picture shift. **Note** To eliminate the adverse effect of the residual chrominance subcarrier component in the Y signal that is the result of the Y/C separation, this unit automatically applies a shift to the playback image in the H direction, so that even in 2-field playback a satisfactory image can be obtained.
713	VIDEO SETUP REFERENCE LEVEL (When operating in 525 mode)		Set the video setup amounts to be removed from a recording signal, and to be added to a composite output signal. There are independent settings for a recording signal (referred to below as an input signal), and a composite output signal (referred to below as an output signal). **Notes** • Setup removal is carried out only with respect to a Betacam format CAV input signal (menu setting) and NTSC composite input signal (option). It is not carried out with respect to other input signals. • The setup amounts specified in this menu item have no connection with the SETUP (DNW-75)/ BLACK LEVEL (DNW-75P) knob on the subsidiary control panel.
	Sub-Item		
	0	MASTER LEVEL	When the input signal and output signal settings are "MSTER" (master), the setup amount specified for this sub-item is removed from the input signal, and is added to the output signal. **0.0% ... 7.5% ... 10.0%:** Setting in this range, in 0.5% increments.
	1	INPUT LEVEL	**MSTER:** Set the input signal to the master setting. **0.0% ... 7.5% ... 10.0%:** Set the setup amount to be removed from the input signal in this range, in 0.5% increments.
	2	INPUT VBLK CONT	**REMOV:** Remove the setup amount in the vertical blanking interval of the input signal. **THROU:** Do not remove the setup amount in the vertical blanking interval of the input signal.
	4	OUTPUT LEVEL	**MSTER:** Set the output signal to the master setting. **0.0% ... 7.5% ... 10.0%:** Set the setup amount to be added to the output signal in this range, in 0.5% increments.
714	VIDEO ADJUST RANGE		Select the variable range of the VIDEO and CHROMA controls when the PROCESS CONTROL switch on the subsidiary control panel is set to LOCAL. **–3~+3:** –3 dB to +3 dB **WIDE:** –∞ to +3 dB

(Continued)

Menu items in the 700s, relating to video control (Continued)
(Items 715 to 720: Settings for controlling the video processing system according to the menu settings.)

Item number	Item name	Settings
715	VIDEO GAIN CONTROL	Adjust the video output level. Default value: **800H**
716	CHROMA GAIN CONTROL	Adjust the chroma output level. Default value: **800H**
717	CHROMA PHASE CONTROL	Adjust the chroma phase. Default value: **80H**
718	SETUP LEVEL	Adjust the setup level (black level). Default value: **110H**
719	SYSTEM PHASE SYNC	Adjust the SYNC control on the subsidiary control panel. Default value: **80H**
720	SYSTEM PHASE SC	Adjust the SC control on the subsidiary control panel. Default value: **0H**

Note

When you make settings for items 715 to 720, set the PROCESS CONTROL switch on the subsidiary control panel to MENU. When set to MENU, all controls on the subsidiary control panel are disabled.

Item number	Item name		Settings
723	INPUT VIDEO BLANK		Switch blanking on or off for individual lines in the vertical blanking interval of an input video signal. The Y/C signal and odd/even fields are blanked simultaneously. A signal with blanking carried out according to this setting is recorded.
	Sub-Item		
	0	ALL LINE	- - - : Specify the blanking for each line separately. **BLANK:** Regardless of the setting of other sub-items, blank all lines which can be specified in this menu item. **THROU:** Regardless of the setting of other sub-items, switch off blanking for all lines which can be specified in this menu item.
In 525 mode	12 ... 20	LINE 12 ... LINE 20	Specify blanking for lines 12 to 20. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.
In 625 mode	9	LINE 9	Specify blanking for line 9. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.
	10 ... 21	LINE 10 ... LINE 21	Specify blanking for lines 10 to 21. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.
	22	LINE 22	Specify blanking for line 22. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.

(Continued)

Menu items in the 700s, relating to video control (Continued)

Item number	Item name	Settings
726	H BLANKING WIDTH	Select the horizontal blanking width of a video output signal. **NARROW:** Digital blanking (narrow) **WIDE:** Analog blanking (wide) When analog blanking is selected, the horizontal blanking width complies with RS170A, and normally the blanking is widened and the image becomes narrower. It is recommended to select NARROW at the editing stage, then later, for broadcast transmission to select WIDE, to output a signal conforming to the standard.
727	VIDEO EDIT PREVIEW SWITCHER	Set the output phase for the video playback signal when any of the ASSEMBLE, VIDEO, and AUDIO CH1 to CH4 buttons is lit. **INT:** The video playback signal output phase is the same as the output phase in the EE mode. Use this setting when editing with a single VTR, or when previewing while watching the VTR output signal. **EXT:** The video playback signal output phase is the same as the phase of an input video signal or external reference signal. **Note** Whichever setting is used, the correct editing results will be obtained. When, however, you are using an external switcher to switch the video output signal from this unit for the purposes of preview, select EXT. This will prevent any image shifts at editing IN and OUT points.
728	OUTPUT SCH PHASE	Set the subcarrier H phase. **Default value:** 800H

Menu items in the 800s, relating to audio control

Item number	Item name	Settings
802	DIGITAL AUDIO MUTE IN SHUTTLE MODE	Set the digital audio muting conditions during shuttle playback. **OFF:** Not muted. **CUEUP:** Muted during cue-up or preroll operations. **FULL:** Muted in shuttle mode.
803	DIGITAL AUDIO FADE TIME	Specify the time for cross-fade or fade in/out editing of audio signals. 5 ms, 10 ms, 15 ms, 20 ms, 25 ms[a], 50 ms[b], 85 ms, 115 ms[c] **Note** The cross-fade or fade in/out operation means that the recording is rewritten from the OUT point for the length specified by this setting. Even at the minimum 5 ms setting, a length of recording corresponding to a field is rewritten. To avoid rewriting, set item 317 AUDIO EDIT MODE to “CUT”, but in this case there is an audio discontinuity at the edit point. There is no effect on the recorded video signal.
805	AUDIO MONITOR OUTPUT MIXING	Select the audio mixing method used for digital audio signals supplied to the MONITOR OUTPUT connector. **ADD:** Simple addition. **RMS:** Root-mean-square. **AVE:** Simple average.
806	LEVEL METER SCALE	Select the mode in which digital audio levels are displayed. **PEAK0:** Displays the audio level as negative values with the maximum level set to 0 dB. **REF 0:** Displays the audio level as positive and negative values with the reference level set to 0 dB.

a) Cross-fade time is 24 ms.
b) Actual value is 49 ms.
c) Actual value is 114 ms.

(Continued)

Menu items in the 800s, relating to audio control (Continued)

Item number	Item name	Settings
807	AUDIO OUTPUT PHASE	Select the output timing of a digital audio playback signal (SDI and AES/EBU only). The reference position corresponds to a setting of 80H; when the setting is less than 80H, the output timing is advanced, and when it is higher than 80H, the output timing is delayed. (80H, 128 samples = approx. 2.7 ms, and 80H, 1 sample=approx. 20 µs) **0 ... [80] ... FF :** Setting in this range.
808	INTERNAL AUDIO SIGNAL GENERATOR	Select the operation of the internal audio test signal generator. **[OFF] :** No operation. **SILNC:** Silent signal. **1KHZ:** At 1 kHz, –20 dB FS sine wave is supplied to all audio input channels. **For settings other than OFF:** Press the audio selection function selector switch several times until the INPUT indicator lights. Then press the CH-1 button in the SDI row, the AES/EBU row, or the ANALOG row and keep it pressed for three seconds or longer. When you release the button, all of the audio signal selection buttons light and an internal signal generator produces an audio test signal.
809	AUDIO LEVEL METER DIMMER CONTROL	Set the brightness of the audio level meters. **[0] ... 7:** Set in this range. 0 is the brightest, and 7 the dimmest.
810	AUDIO EDIT PREVIEW SWITCHER	Set the output phase for the audio playback signal when any of the ASSEMBLE, AUDIO, and AUDIO CH1 to CH4 buttons is lit. **[INT]:** The audio playback signal output phase is the same as the output phase in the EE mode. Use this setting when editing with a single VTR, or when previewing while watching the VTR output signal. **EXT:** The audio playback signal output phase is the same as the phase of an input video signal or external reference video signal. **Note** Whichever setting is used, the correct editing results will be obtained. When, however, you are using an external switcher to switch the audio output signal from this unit for the purposes of preview, selecting EXT will prevent any muting or discontinuities in the audio at editing IN and OUT points.
815	AUDIO SAMPLING RATE CONVERTER	Select the mode of operation of the sampling rate converter for AES/EBU input to channels 1 to 4. **[OFF] :** No operation. **44kHz:** Operate. Choose this setting when the input signal sampling frequency is 44 to 48 kHz. **32kHz:** Operate. Choose this setting when the input signal sampling frequency is 32 kHz.
817	EMPHASIS	Select whether or not to apply emphasis when recording analog audio signals. **[OFF] :** No emphasis. **ON:** Apply emphasis.

Menu items in the 900s, relating to digital processing

Item number	Item name	Settings
903	FREEZE MODE	Select the freeze mode and timing. **FIELD:** Freeze a video field. Field may be odd or even, according to the timing. **FLD1:** Freeze an odd field. **FLD2:** Freeze an even field. **FRM12:** Freeze a frame consisting of an odd field and following even field. **FRM21:** Freeze a frame consisting of an even field and following odd field. Odd and even fields are distinguished by the reference video signal. Changing the menu setting during a freeze does not affect the freeze image. The setting is reflected the next time a freeze is carried out.
904	FREEZE CONTROL FROM KEY PANEL	Select the control panel operation for a freeze. **MOMNT:** A freeze is carried out while the button is held down. **LATCH:** When the button is pressed, a freeze is carried out, and this state is maintained when the button is released. During a freeze, if the same operation is repeated the freeze image is updated. The operation is as follows. • Press the DELETE button and TRIM + button on the control panel simultaneously to carry out a freeze. • Press the DELETE button and TRIM – button on the control panel simultaneously to end the freeze. Item 903 determines the details of a freeze.
905	AUTO FREEZE CONTROL	Set the auto freeze function operation (conditions for ending a freeze, etc.). In dynamic tracking playback (so-called variable, jog, shuttle, or normal play), if there is a sudden worsening of the channel condition (unrecordable signals), this function freezes the image. **DIS:** Disable the auto freeze function. **MODE1:** End the freeze when signals which can be recorded normally are restored. **MODE2:** End freeze automatically on playback after stopping. • The automatic freeze mode is determined by item 903. • The freeze is ended immediately, regardless of the above conditions, when this unit is switched to any of the following modes: EDIT preset on CUEUP mode Recording mode
906	STOP FREEZE CONTROL	Select whether or not the STOP FREEZE function should operate. **DIS:** Does not operate. **ENA:** Operates.
911	NO COMPRESSION LINE	Specify the “NO COMPRESSION” line (1 line in 1 field) for video input other than SDTI input. **OFF:** No specification. **12H ... 21H:** Specify one of lines 12 to 21. **Notes** • The data in the specified line will be recorded and played back without video data rate compression. • Data values 0x00 and 0xFF will be converted to 0x01 and 0xFE for playback. • For the line specified in this item, it is not possible to carry out video adjustment, chroma adjustment, or other output adjustments. • When item 726 is set to WIDE, a number of words at the beginning and end of each line will be subject to horizontal blanking, and will not be played back. • For playback of a composite signal in jog or variable mode, according to the setting of item 705, the data will be subject to ESR (edge subcarrier reducer) processing.

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7-3-2 Extended Menu Operations

In the extended menu, you can carry out the same operations as in the basic menu.

For details of basic menu operation, see Section 7-2-2, “Basic Menu Operations” (page 7-4).

Note

To access the extended menu, a setting on the internal SS-83 board is required.

For details, refer to the Maintenance Manual Part 1.

8-1 Removing a Cassette When Tape Slack Occurs

If tape slack occurs in the unit, it is necessary to remove the upper lid and sound baffle. This job should always be entrusted to a technician who has undergone service training.

For details, refer to Section 2-12, "How to Take Out the Cassette When the Tape is Slacking", in the Maintenance Manual Part 1.

8-2 Head Cleaning

To clean the video heads and audio heads, always use the special-purpose Sony BCT-5CLN cleaning cassette.
Follow the instructions with the cleaning cassette carefully, as inappropriate use of the cleaning cassette can damage the heads.

To carry out head cleaning, use the following procedure.

1 Insert the cleaning cassette.

2 Press the EJECT button and PLAY button simultaneously.

Head cleaning starts.

3 After a head cleaning operation which lasts for about 5 seconds, the cleaning cassette is automatically ejected.

Note

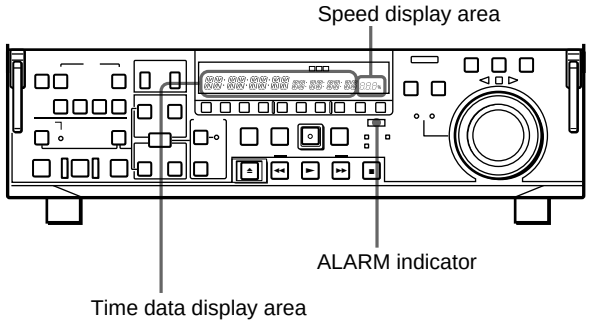
When carrying out head cleaning without using the automatic cleaning function described above, be sure to eject the cleaning cassette after use in order not to damage the heads.

8-3 Error Messages

This unit is equipped with a self-diagnosis function, and if a problem is detected, displays an error message in the time data display and on the monitor.
If an error message appears, contact your Sony service representative.

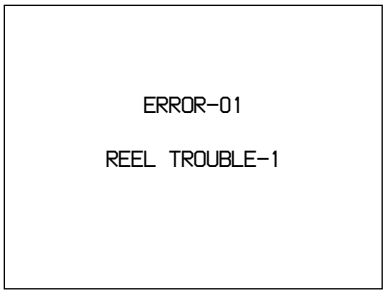
Indications in the time data display

If a problem is detected, the ALARM indicator in the lower control panel lights, and an error message and error code appear in the time data display area and speed display area.



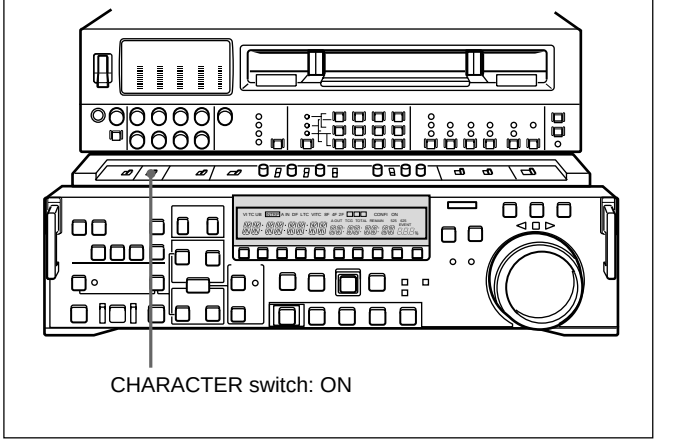
Indications on the monitor

The error message and code also appear superimposed on a monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or SDI OUTPUT 3 (SUPER) connector. Depending on the error code, an indication of the source of the problem may appear as a secondary error message.



Error message displays

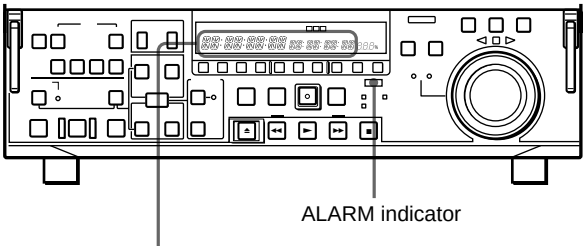
• To display error messages and codes superimposed on the monitor, the CHARACTER switch on the subsidiary control panel must be in the ON position.



• Some error messages have no associated error codes. In this case, only the time data area indication appears.
• Error messages with error codes are saved in non-volatile memory as an error log.
• In some cases the error message is slightly different on the monitor and in the time data area.

8-4 Moisture Condensation

When the unit is suddenly moved from a cold to a warm location, or used in a very humid place, moisture from the air can condense on the head-drum. This is called moisture condensation. If the tape is run in this state, it can adhere to the drum. To prevent such a condition from occurring, the unit is provided with a moisture detecting function.
If moisture condenses on the head-drum while the unit is in use, “ERROR-10” is displayed in the time data display.



If moisture condensation occurs, “ERROR-10” appears in the time data display area.

If this happens, the drum and capstan motors stop and the cassette is automatically ejected. Then, the durm starts to rotate again to dry its surface. In this state, the unit is not operable. When the moisture has evaporated, the error message disappears and the ALARM indicator goes off.

If “ERROR-10” appears and the ALARM indicator lights immediately after powering the unit on

Leave the unit powered on and wait until the error message disappears and the indicator goes off.
While the indicator is lit, you cannot insert a cassette. When the indicator goes off and the error message disappears, you can use the unit.

If you move the unit from a cold to a warm location

Leave the unit powered off for about 10 minutes, in order to give the unit time to detect moisture condensation.

8-5-1 Digital Hours Meter

The hours meter can display eight items of information, in corresponding display modes, about the operational history of the unit. Use it as a guide in scheduling periodic maintenance.

Display modes of the hours meter

H01: OPERATION mode
Displays the total number of hours the unit has been powered on in units of 1 hour.

H02: DRUM RUNNING mode
Displays the total number of hours the drum has run with tape threaded in units of 1 hour.

H03: TAPE RUNNING mode
Displays the total number of hours the unit has been in fast forward, rewind, playback, search, recording or editing (except for stop and still) mode in units of 1 hour.

H04: THREADING mode
Displays the total number of times tape has been threaded in the unit.

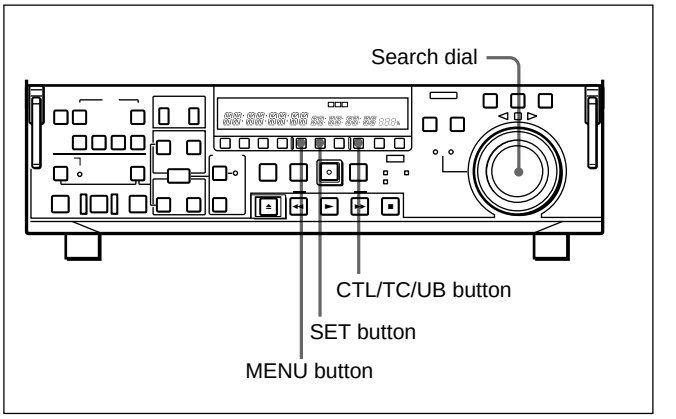
H12: DRUM RUNNING mode (resettable)
Same as H02 except that the count is resettable. This can be used as a guide in determining when to replace the drum.

H13: TAPE RUNNING mode (resettable)
Same as H03 except that the count is resettable. This can be used as a guide in determining when to replace such components as fixed heads and pinch rollers.

H14: THREADING mode (resettable)
Same as H04 except that the count is resettable. This can be used as a guide in determining when to replace, for example, the threading motor.

H15: TTP FAN (tape deck fan)
Displays the total number of hours the tape deck cooling fan has run since the count was last reset.

Displaying the hours meter



To display the hours meter
Press the MENU button, then turn the search dial to display the required item in the time data display.

To jump to H01
Press the MENU button, then the CTL/TC/UB button. Every time you press the CTL/TC/UB button, menu item H01 or B01 is recalled alternately.

To exit from the hours meter
Press the MENU button or SET button.

8-5-2 Maintenance Timings

Use the following table as a timing guide for checking and replacing components of the unit.
These intervals are not guaranteed lifetimes; the timing for replacing components depends on the particular conditions of use. In particular, depending on the degree of dirt contamination and abrasion, pinch rollers and cleaners may require replacement earlier than suggested by this table.

Note that an arrow in the table means that the component to be replaced is part of the assembly the arrow points to, which must be replaced as a whole.

Component	Digital hours meter indication (menu number in parenthesis)	Guideline replacement intervals					
		R: Replace C: Check, and replace if necessary					
		1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs
Upper drum	Drum running time (H02)		C	C	C	C	C(↓)
Drum assembly							C
Brush slip ring assembly							R(↑)
Video head cleaner		C	R	C	R	C	↓
Video head cleaner assembly	Drum running time (H02)						R
	Threading count (H04)	Replace after 200,000 operations					
AT head cleaner assembly	Drum running time (H02)	C	R	C	R	C	R
Pinch roller	Tape running time (H03)	C	R	C	R	C	R
Reel motor					R		
Capstan motor							R
Pinch solenoid	Tape running time (H03)						R
	Threading count (H04)	Replace after 200,000 operations					
Fan motor (rear)	Operation time (H01)	Replace after 40,000 hours					
Fan motor (MD)		Replace after 40,000 hours					
Fan motor (PS)		Replace after 40,000 hours					

Specifications

General

Recording format Betacam SX
Power requirements
100 to 240 VAC, 50/60 Hz
Power consumption
184 VA
Peak inrush current
(1) Power ON, current probe method: 10A(100V) 20A(240V)
(2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 14A(230V)
Operating temperature
5°C to 40°C (41°F to 104°F)
Storage temperature
–20°C to +60°C (–4°F to +140°F)
Humidity 20 to 90%
Mass 26.7 kg (58 lb 13 oz)
Dimensions (w/h/d)
427 × 237 × 524 mm
(16 7/8 × 9 3/8 × 20 3/4 inches)

Tape transport system

Tape speed 59.6 mm/s
Digital record/playback time
194 minutes with BCT-194SXLA
Fast forward/ rewind time
Approx. 3 minutes with BCT-184SXL
Search speed
Shuttle mode Still to approx. ±78 times normal playback speed
Variable mode –1 to +2 times normal playback speed
Jog mode Still to ±1 times normal playback speed
Servo lock time 0.5 seconds or less (from standby on)
Load/unload time 6 seconds or less
Recommended tapes
Betacam SX cassette (S, L):
BCT-12SX(A)/22SX(A)/32SX(A)/60SX/62SXA,
BCT-64SXL(A)/94SXL(A)/124SXL(A)/184SXL(A)/194SXLA
Betacam SP cassette (S, L)

Digital video system

Digital video signal system

Sampling frequency
Y: 13.5 MHz
R–Y/B–Y: 6.75 MHz
Quantization 8 bits/sample
Compression Coefficient recording system
Channel coding S-I-NRZI PR-IV
Error correction Reed-Solomon code

Analog component output

Bandwidth
Y DNW-75: 0 to 4.5 MHz +0.5 dB/ –3.0 dB
DNW-75P: 0 to 5.5 MHz +0.5 dB/ –3.0 dB
R–Y/ B–Y 0 to 2.0 MHz +0.5 dB/–3.0 dB
S/N ratio 56 dB or more
K factor (2T pulse)
1% or less

Analog component input to component output

Input A/D quantization
10 bits/ sample
Bandwidth
Y DNW-75: 0 to 4.5 MHz +0.5 dB/ –3.0 dB
DNW-75P: 0 to 5.5 MHz +0.5 dB/ –3.0 dB
R–Y/ B–Y 0 to 2.0 MHz +0.5 dB/–3.0 dB
S/N ratio 52 dB or more
K factor (2T pulse)
1% or less
LF non-linearity 3.0% or less

Analog composite input to analog composite output

Bandwidth (Y)	DNW-75: 0 to 4.5 MHz +0.5 dB/ –3.0 dB DNW-75P: 0 to 5.5 MHz +0.5 dB/ –3.0 dB
S/N ratio	53 dB or more
Differential gain	2% or less
Differential phase	2° or less
Y/C delay	20 ns or less
K factor (2T pulse)	1% or less
Output SCH phase	Based upon RS-170A/CCIR R.624-3 (Adjustable by using the menu)

Digital audio system

Digital audio (CH-1 to CH-4) signal format

Sampling frequency	48 kHz (synchronized with video)
Quantization	16 bits/ sample
Wow and flutter	Below measurable level
Headroom	20 dB (or 18 dB, selectable)
Emphasis	T1= 50 µs, T2=15 µs (on/off selectable in recording mode)

Analog output

A/D, D/A quantization	16 bits/sample
Frequency response	20 Hz to 20 kHz +0.5 dB/ –1.0 dB (0 dB at 1 kHz)
Dynamic range	90 dB or more (at 1 kHz, emphasis on)
Distortion	0.05% or less (at 1 kHz, emphasis on, reference level (+4 dBm))
Crosstalk	–80 dB or less (at 1 kHz, between any two channels)

Processor adjustment range

Video level	±3 dB/ –∞to +3 dB selectable
Chroma level	±3 dB/ –∞to +3 dB selectable
Setup level (DNW-75)	±30 IRE
Black level (DNW-75P)	±210 mV
Chroma phase	30°
System phase	Sync: ±15 µs SC: ±200 ns

Input connectors

SDI INPUT	BNC (1 with active through out) Serial digital (270 Mbits/s) SMPTE 259M/ CCIR 656-III
REF. VIDEO INPUT	BNC (2 in loop through connection) Black burst or composite sync 0.3 Vp-p, 75 Ω, sync negative
COMPONENT VIDEO INPUT	BNC (3 for 1 set) Y: 1.0 Vp-p, Sync negative R–Y/B–Y: 0.7 Vp-p, 75 Ω, with 100% color bar for DNW-75P and with 100% or 75% color bar selectable for DNW-75
COMPOSITE VIDEO INPUT	BNC (2 in loop through connection) 1.0 Vp-p, 75 Ω, Sync negative
AUDIO INPUT CH-1/2/3/4	XLR 3-pin, female (4) LOW OFF: –60 dBu, high impedance, balanced HIGH OFF: +4 dBu, high impedance, balanced HIGH ON: +4 dBm, 600 Ω termination, balanced
AUDIO INPUT(AES/EBU) CH-1/2 and CH-3/4	BNC (2) Complies with AES-3id-1995
TIME CODE IN	XLR 3-pin, female (1) 0.5 to 18 Vp-p, 10 kΩ, balanced

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Output connectors

SDI OUTPUT BNC (3 including 1 for character superimpose)
serial digital (270 Mbits/ s)
SMPTE 259 M/CCIR 656-III
SDTI OUTPUT (Only available with the BKNW-118 option installed)
BNC (2)
SMPTE 305M
COMPONENT VIDEO OUTPUT
BNC (3 for 1 set)
Y: 1.0 Vp-p, Sync negative
R–Y/B–Y: 0.7 Vp-p, 75 Ω, with 100% color bar for DNW-75P and with 100% or 75% color bar selectable for DNW-75
COMPOSITE VIDEO OUTPUT
BNC (3 including 1 for character superimpose)
1 Vp-p, 75 Ω, Sync negative
AUDIO OUTPUT CH-1/2/3/4
XLR 3-pin, male (4)
+4 dBm at 600 Ω load, low impedance, balanced
AUDIO OUTPUT (AES/EBU) CH-1/2 and CH-3/4
BNC (2)
Complies with AES-3id-1995
MONITOR OUTPUT (L/R)
XLR 3-pin, male (2)
+4 dBm at 60 Ω load, low impedance, balanced
TIME CODE OUT
XLR 3-pin, male (1)
2.2 Vp-p, low impedance, balanced
PHONES JM-60 stereo phone jack
–∞to –12 dBu at 8 Ω load, unbalanced

Remote connectors

CONTROL PANEL
29-pin, female
REMOTE1-IN(9P)
D-sub 9-pin, female
REMOTE1-OUT(9P)
D-sub 9-pin, female
RS-232C D-sub 9-pin, male
VIDEO CONTROL
D-sub 15-pin, male (for optional BVR-50/50P)
REMOTE 2 PARALLEL I/O (50P)
50-pin, female

Accessories supplied

PSW 4 × 16 screws for rack mounting (4)
Operation Manual (1)
Installation Manual (1)

Optional accessories

RCC-5G 9-pin remote control cable
Maintenance Manual Part 1
BVR-50/50P TBC Remote Controller
RMM-110/111 Rack Mount Adaptor
BCT-5CLN Cleaning Cassette Tape
AC power cord
• For customers in the U.S.A. and Canada
Part No. 1-557-377-11
Plug holder 2-990-242-01
• For customers in the United Kingdom
DK-2401 (UK)
Plug holder 2-990-242-01
• For customers in European countries other than the United Kingdom
DK-2401 (AE)
Plug holder 2-990-242-01
BKNW-118 SDTI(SX) Output Board

Design and specifications are subject to change without notice.

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